THE RUBBER AGE

ESTABLISHED 1917

COVERS ALL PHASES OF THE PRODUCTION AND MARKETING OF CRUDE RUBBER AND THE MANUFACTURE AND DISTRIBUTION OF RUBBER GOODS

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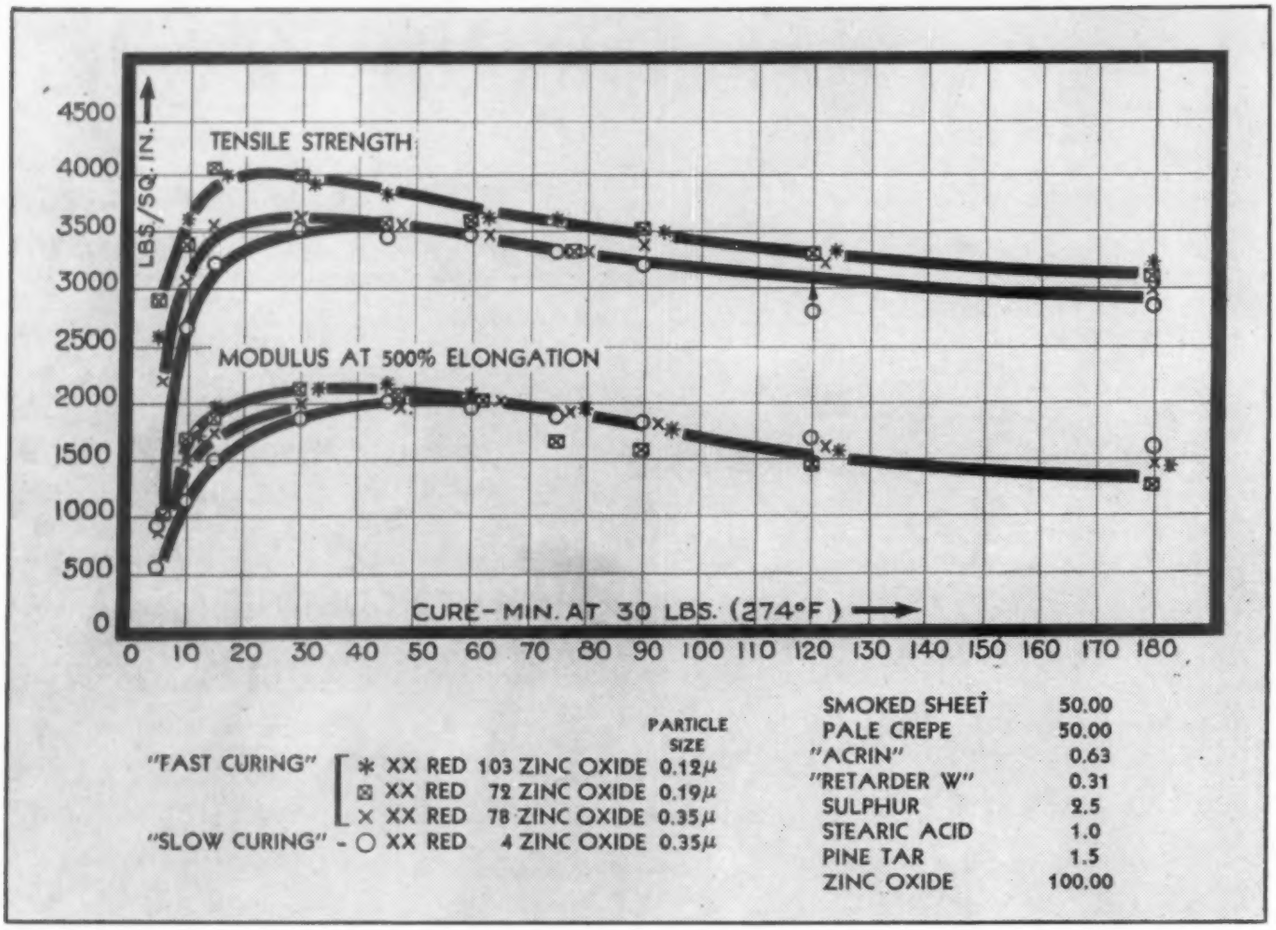

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Vol. 35 SEPTEMBER, 1934 No. 6

Compounding With Rubber Latex

A Treatise on Compounding Liquid Rubber From Selection of Latex Grade Through Varied Steps

By W. J. R. Hauser

Vice-President, Heveatex Corporation, Melrose, Mass.

MOST people, including many rubber chemists and compounders who are not familiar with rubber latex, seem to be of the opinion that there is considerable mystery and uncertainty about handling latex, particularly latex compounding. However, for anyone familiar with rubber and particularly with compounding materials and their properties, there is neither mystery nor difficulty about the procedure, which is basically the same procedure used in ordinary compounding, utilizing in most cases the same chemicals and many of the same fillers, whose addition is calculated on the dry rubber content of the latex in the usual way.

Certainly some precautions are necessary and there are sundry variations in the preparation of compounding chemicals before adding them to the latex, but these details are now quite well known and are soon grasped by anyone experienced in compounding rubber.

Before discussing the compounding of latex, it is advisable to study the several types available on the market. There are at present three standard types of latex in commercial use and a consideration of their individual characteristics is desirable with a view to determining which one should be selected for any particular type of compound or use. Highly concentrated latex pastes, having solids of the order of 70% to 75% and prepared by evaporation or chemical processes, contain added protective colloids which are introduced to facilitate the process of concentration and to maintain the stability of the latex in this highly concentrated form. Generally these additions consist of soaps and possibly a small amount of fixed alkali. The presence of these materials make this type of concentrate unsuitable for certain purposes, although quite suitable for others. There is a tendency to froth or foam if used in any type of machine where the mix is subject to agitation. Also on account of this tendency and imprisoned air bubbles, this type of latex is not generally suitable for dipping operations; on the other hand it is quite suitable for mixes which are to have a high proportion of fillers or compounding ingredients.

As this type of latex is quite stable, due to the protective action of the soaps mentioned, it will allow heavy loading without further addition of protectives and, therefore, in mixes containing a high percentage of fillers such as clay or whiting, it gives quite satisfactory results more or less equal to those obtained when using more purified forms of latex for the reason that in the latter case it would be necessary to add protectives during the compounding to carry the heavy loading in any event. On account of its high viscosity and ease of control with or without various thickening agents and also its stability for the purpose, it is quite suitable as a rule for spreading compounds and particularly for compounds for combining fabrics, adhesive compounds, and similar uses.

The rubber deposited from such latex is a comparatively soft rubber and also tends to take up moisture rather readily so that this tendency must have consideration in certain types of proofing where water spotting would be objectionable. The softer rubber for some purposes may often be desirable and in some classes of work this form of latex is often admixed with other forms to modify the deposited rubber in this respect. This type of concentrate is somewhat slower in drying than other types and the uncured films hold their tack for longer periods of time. Depending on the work this may be an advantage or a disadvantage.

* Based on an address before the Boston Rubber Group, American Chemical Society meeting, at Boston, Mass., June 8, 1934.

Another form of commercial concentrated latex which is enjoying wide popularity at present is that obtained as a result of mechanical processes and is available on the market in concentrations of 50% to 60%. This type of concentrate deposits a substantially transparent rubber in the uncured state, comparatively dry, of high tensile strength, and with the usual characteristics of unmilled rubber. It has less tendency to froth or foam than other concentrates and is probably more uniform, particularly in its curing characteristics. It is widely used for dipped goods and many other compounds. It is comparatively quick drying, quick setting, and unstable, for the latter reason when compounded with high percentages of fillers, additional protectives, wetting agents, or compounding aids such as Darvan, must be added. It also has more of a tendency to thicken as a result of the action of various compounding or vulcanizing agents than the more highly stabilized forms of commercial latex. In the form of a 60% concentration it usually has sufficient viscosity to maintain readily most of the common compounding ingredients.

Advantage of Normal Latex

While the concentrates of the two types mentioned above are widely used, normal latex of a solids content of 38% to 40% still has the advantage of the lowest cost material available to the compounder. There are many estates now shipping part of their crop into this market as normal latex but the variations in this latex from many different sources and prepared under many different conditions are somewhat notorious and it is highly important if normal latex is to be used that it be obtained from a source where some comparative uniformity can be guaranteed. This degree of uniformity is usually obtained by the simple process of bulking large quantities of the latex and lately mechanical clarification has been shown to be of advantage in further improving this natural product.

One of the drawbacks to the use of normal latex has been its low viscosity which allows fillers or vulcanizing agents to settle out and making it necessary to keep the compounds under slow circulation or agitation to maintain these added materials in uniform dispersion. In view of the cost advantages it would seem desirable to select normal latex wherever it can be readily handled. There are of course many ways of modifying its properties and increasing its viscosity, such as by the addition of gums or chemicals, etc.

On account of the increasing market value of rubber it would seem probable that compounding with normal latex will receive more attention in the near future than it has in the last two or three years, for after all there is little incentive in starting with a concentrated latex to produce diluted highly filled compounds which in the end only have a rubber content of 20% to 50% on the final solids when such results with possibly only a little more trouble in formulating the compound, can be obtained with the cheaper material. Normal latex, being more stable, does not have the same tendency to thicken on standing after being compounded as does for instance centrifuged concentrates. It penetrates into fibrous material more freely than such concentrates even though the latter are diluted and, therefore, in this respect presents definite advantages.

It should again be emphasized that for any form of continuous manufacturing operation a raw material which will be comparatively uniform from one delivery to another should be selected. The latex specification is generally of more importance than any other material entering into the compound.

Most of the chemical supply firms are now offering their products, — accelerators, anti-oxidants, etc., prepared in a form, i.e., dispersed or in suspension, suitable for direct use with latex and are prepared to supply the usual technical information to their customers on the use of their products in latex. Furthermore, there are some latex suppliers who also co-operate in like manner with consumers who have prospective uses. The availability of standardized grades of latex, not only normal, but several forms of concentrated latex, give the compounder a raw material to use, about which he can obtain all the necessary information, so that every inducement today exists for rubber chemists and compounders to familiarize themselves with the compounding of latex as an essential part of their profession and enable them to independently contribute improvements and forward steps in the art of its utilization.

The primary step is to select the type of latex best suited for the results desired and this can be done in much the same way as the type of rubber, whether smoked-sheet or crepe or off-grades, would be selected for ordinary compounding. The selection of vulcanizing agents would then be governed in exactly the same way as it would be in ordinary rubber compounding, depending on the type and time of cure desired. Sulphur and zinc oxide may be added in their ordinary commercial form in coarse mixes which do not require too fine a distribution of the fillers; the procedure in that case is merely to wet these materials with water assisted by a wetting agent or by a protective such as casein, glue, etc., and where this method would not produce the best results the sulphur and zinc oxide are first ground in pebble mills or colloid mills or these materials may be purchased from a number of sources already dispersed and ready for use.

After considering whether a high or low modulus cure is desired, the accelerator would be selected in exactly the same manner as in ordinary compounding. Generally speaking, however, owing to the fact that there are no scorching difficulties to be encountered, reasonably fast accelerators have been widely employed. Where these are water soluble there is no problem, of course, in adding them to the latex mix. Where they are not, they can readily be dispersed, in some cases by simply stirring up with a little wetting agent or protective, or in other cases by preparing an accelerator paste either in a ball mill or colloid mill or purchasing this paste, made up ready to use, direct from the accelerator supply house.

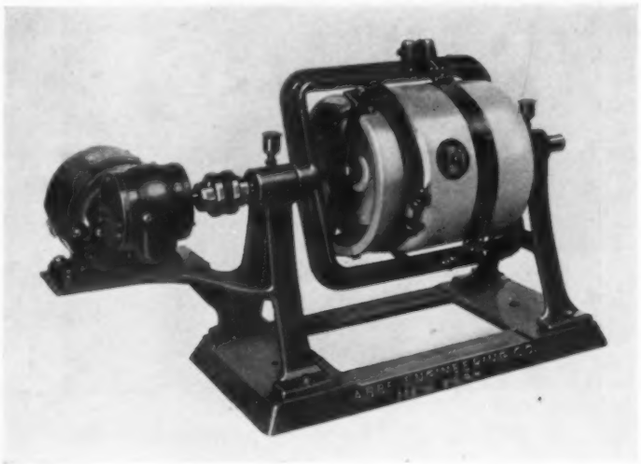
Use of Fast Accelerators

There is, of course, no danger of scorching in using fast accelerators with latex. On the other hand, there are certainly some precautions to be observed; for instance, some accelerators in the presence of zinc oxide cause a latex mix to thicken on standing and this thickening is in most cases objectionable. Not only do accelerators which have a somewhat acidic reaction, exhibit this peculiarity, but many of the basic accelerators in the presence of zinc oxide also cause thickening. This is usually controlled by varying the proportions of the vulcanizing agents, by the use of protective or neutralizing agents or by the addition of the accelerator shortly before the material is to be utilized. Again with fast accelerators one has to be careful to keep the proportions of sulphur, zinc oxide and accelerator sufficiently low so that there is no tendency to thicken, set up, or vulcanize while in suspension, at room temperatures.

It is a peculiarity of mixes which are over-accelerated, so that they set up or start curing at room temperature, that the product usually becomes thickened and difficult to control or make use of. Rubber compounders will be familiar with a somewhat identical action when fast accelerators are added to rubber gasoline cements, causing them to jell. Generally compounders can always obtain from either the chemical supply houses or latex purvey-

ors suggestions on formulations which take these points into consideration.

It must, of course, be taken as a principle that practically all compounding ingredients in latex must first either be wetted or dispersed and the question of maintaining a suitable viscosity or condition to keep vulcanizing agents and fillers in suspension must also be considered. The use of concentrated latex which has a comparatively high viscosity has largely solved questions of suitable viscosities for maintaining filler in suspension and, of course, in the case of highly filled mixes stabilizers to prevent coagulation are necessary although it is generally preferred to use these in the minimum quantity required to accomplish the results. Such stabilizers are ammonia-casein solutions, glue, soaps and many of the well known wetting agents and stabilizers, such as the Nekals, Aquarex, Igepons, Darvan, etc. The addition of such wetting agents may be expected in many cases to lower the surface tension of the latex mix to cause it to penetrate more freely into fibrous materials, etc., whereas, of course, the addition of casein and glue solutions in some cases will give an increase in viscosity, where such increase is desired. The preparation of such fillers as whiting, clay, pigments, etc., into a smooth and homogeneous paste is generally carried out by wetting them with water and a small amount of protective agent and passing them through a colloid mill or even an ordinary paint mill. The water absorbing properties of the fillers must be carefully considered and there is a very considerable variation in the different types of clays in this respect.



A type of mill suitable for preparing accelerator or filler pastes preparatory to incorporating with latex. (Photo, courtesy of Abbe Engineering Co., New York.)

It must always be borne in mind in relation to heavily loaded compounds that the resulting deposited compounded rubber is not the same as the identical compound would be if milled. Reinforcing agents, such as carbon black, do not reinforce but become merely fillers or diluents. In a milled compound the fillers are more evenly dispersed than is possible with latex and the filler particles are more uniformly wetted with the rubber, whereas in compounded latex deposits the fillers might be said to be entrapped by the rubber but not wholly wetted by it. For this reason the proportion of fillers on the dry rubber is somewhat more limited.

Inorganic colors are usually prepared and added in the same way that clay, whiting or other fillers would be added. Organic colors must be stable to alkalies and require a very thorough pre-dispersion. Some organic colors have a tendency to flocculate after being added to the latex mix even though they were well dispersed beforehand, but dispersed colors for use in latex are now freely available from suppliers so that their selection is merely a matter of trial and experiment.

Anti-oxidants are now also freely available in dispersed form, although many of the standard anti-oxidants which are in powdered form can readily be used by merely wetting and thoroughly stirring prior to adding to the mix. Anti-oxidants in liquid form can, of course, be emulsified. Anti-oxidants of the resinous type are not so generally employed because of the extra care that would have to be taken to put them in suitable form.

In making up a mix it is a question of trial and experiment and, to a certain extent, of experience as to whether all of the compounding ingredients should be mixed together and added as a whole, or whether separate dispersed batches of accelerator, sulphur and anti-oxidant should be made and added separately. There are, of course, certain fillers which cannot be used, such as magnesium carbonate, mineral rubber, lime, etc.

As far as rubber substitute or factice is concerned, this can only be used if present in the form of a water dispersion. In that case factice can be used advantageously, particularly for single proofing of fabrics where it will produce a very nice finish.

Among the fields of principle application today where latex has been widely used may be mentioned the following: dipped goods including druggists' and surgical goods of the pure gum type such as surgeons' gloves. These usually employ the purified latex concentrates compounded with low sulphur, low zinc oxide and accelerators which will produce a fast cure after drying. Household gloves which have so far appeared on the market do not contain the high percentage of fillers common in naphtha-cement dipped gloves as anything like the same percentage of filler produces a rather harsh, stiff article in latex and the household gloves now common on the market consist of about the same formulation as surgeons' gloves plus organic colors to give brilliant shades. Latex compounded about as indicated for surgeons' gloves produces baby nipples of very high quality inasmuch as they will withstand repeated boiling and are much more durable than the acid cured type. No form of latex transparent nipple has as yet taken the market due to difficulties in obtaining an absolutely transparent article by the method. Compounded nipples are, however, easy to produce and exhibit the desirable properties mentioned.

Bathing caps both of pure gum and with organic colors are much tighter fitting and have longer life than the ordinary article. Several manufacturers have developed light overshoes which have attractive properties and are produced with many surface designs and figures. Compounds for this purpose are generally of high viscosity and follow fairly closely the practice in ordinary rubber compounding as to fillers and vulcanizing agents, colors, etc. and are usually cured at the regular standard footwear cure.

One of the most important applications today in the textile field is the coating of V weave automobile plus. These compounds are formulated particularly with regard to good aging as such fabrics are scoured and dyed after coating and the rubber must withstand these operations and, in addition, give long service without perishing. Liberal use of anti-oxidants has produced compounds giving excellent results.

The use of latex for adhesives of all kinds is well known and manufacturers making goods for the automobile trade such as moulded floor mats have used it to cement jute backings to same. Both normal and concentrated latex are used for many adhesive purposes and as vulcanization is not required as a rule, compounding if any is aimed at reducing cost or altering viscosity, drying time or adhesive properties.

Rubber Seats for Automobiles

TESTS have been conducted over a period of years by technologists throughout the world with regard to the use of rubber for seats and upholstery in automobiles. Consulting mechanical engineers of the Rubber Growers' Association of England conducted a number of interesting experiments in connection with the use of stretched sheet

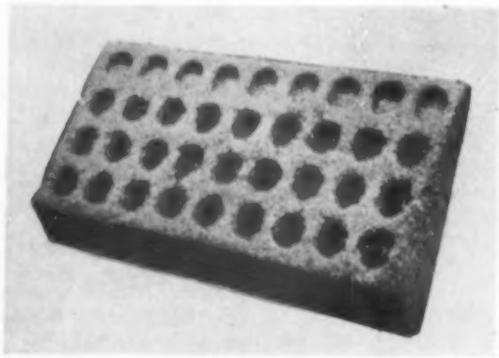


Figure 1

rubber diaphragms placed directly below the actual seat in 1929. The results of these tests proved that the road shocks were appreciably lowered.

The Darracq Motor Engineering Co., Ltd., of England, is now using rubber for seatings on Talbot motor cars. These cars use rubberized hair upholstery, molded to the required shape, used in conjunction with springs in the seats. The illustration (Figure 1) shows the treatment in this instance. Rubberized hair is also used for squabs and arm rests in these cars.

Success has also been achieved in Talbot cars with the use of rubber slatting as a baseboard for the seats, adding greatly to the general comfort of the rider. Replacing the canvas webbing type, the rubber slats are secured to a metal angle frame with bifurcated rivets. Only a small number of strips are used, each measuring about 1¾" wide by ¼" thick. These strips have a limited extensibility so that the periodicity of the spring base is kept down to a reasonable limit. The cross supports are spaced according to the positions generally used by passengers. This may be seen from Figure 2 which shows the rubber slatting spaced for three passengers.

When used with cellular rubber or pneumatic cushions this type of suspension is said to be satisfactory. To prevent dust from entering the body or damaging the cushions an easily detachable waterproof cover is fitted over the rubber support. The rubber slatting allows the use of a shallow seat cushion, combining ample head room with a low roof.

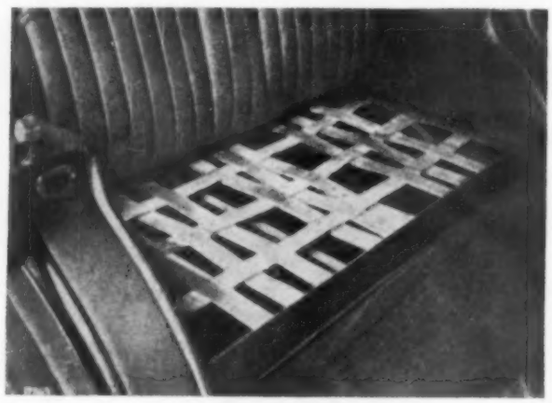


Figure 2

The purchaser is given the option of having rubberized hair, cellular rubber or pneumatic cushions in Talbot cars but all are supported upon a yielding base instead of the comparatively unyielding canvas webbing or the plywood type of base common in the automobile industry.

Rubber Activities in Japan

LOWER prices of rubber, primarily caused by increasing lagging behind of consumption compared with production (one of the reasons for the instituting of the current restriction scheme), has had an encouraging effect on the development of the Japanese rubber industry, according to the July 21 issue, of the *Canadian Commercial Intelligence Journal*. In 1930 Japan consumed 33,000 tons of rubber, representing 9% of the total consumed by all countries other than the United States, which regularly absorbs one-half of total world production. In 1932 Japanese consumption had increased to 53,000 tons, or approximately 15% of total consumption of all countries other than the United States.

In 1931 a total of 837 factories were engaged in the manufacture of rubber goods in Japan. Of these, 268 made footwear; 136 tires and accessories; 75 toys; and the remainder various other articles of rubber. Among the rubber products manufactured in the Nipponese country are included: airplane, automobile and rickshaw tires; hose, tubes, beltings; dolls; toys; footwear; air cushions; medical appliances; balloons; rubber-lined cloth; and ebonite goods. Both heating and cooling production methods are employed.

Although it is difficult to secure detailed production figures, due to the fact that manufacture is still conducted primarily on a small scale, the Canadian Department of Commerce and Industry has prepared a table giving total values of various rubber products manufactured in Japan for the years 1929-31. It will be noted from the table that values have declined. This has been caused by the exceptional drop in the price of rubber.

Production of Rubber Goods in Japan

	1929	1930	1931
	Figures in 1,000 Yen		
Tires and accessories	25,753	19,285	19,454
Machinery accessories	2,126	1,420	636
Footwear	28,797	20,443	15,930
Toys	2,318	2,313	3,320
Tubes	1,319	1,973	5,304
Belting	4,698	4,577	4,005
Others (soft)	9,860	9,552	8,899
Electric batteries	212	233	264
Others (hard)	1,515	970	849
Total	75,598	60,766	59,661

Packaging Rubber Products

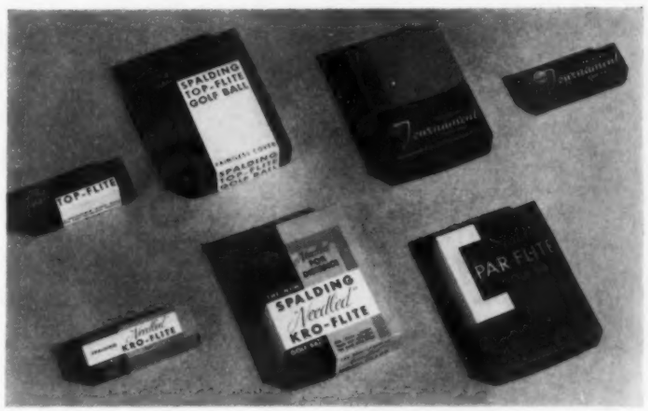
Merchandising Trend Teaches That Consumer Preference Often Hinges on Attractive Presentation of Products

By M. E. Lerner

GOOD PACKAGING is synonymous with good merchandising. Especially has this statement been emphasized in the past few years with the search for new selling points resulting in better types of packages. There are few items of merchandise intended for consumer attention that do not lend themselves to being packaged. Not only products that are sold from retailer's shelves must be attractively dressed, but such prosaic items as rubber hose, packings, and the like, call for eye-appealing, protective containers to meet the modern trend of merchandising effort. The greater majority of manufacturers of rubber products have packageable items that call for packaging. We review here some efforts taken along this line.

It is doubtful whether there has been any endeavour in the packaging of rubber products as revolutionary as the steps taken in behalf of rubber rainwear. Leading the parade in this case is the Arrow Importing Company, Cleveland, whose Gooseskin Raingard raincoats are made of a material based on a composition of pure silk impregnated with rubber. These coats weigh 16 ounces and are merchandised in two types of packages, one intended purely for the gift market and the other for the all-year round rainy weather. The gift container is made in the form of a book and is even given a title—Stormy Weather. The "book" is bound in suede paper and leatherette, an imitation leather. Lettering is in gold, with the side and interior of the box covered with gold paper. Vari-colored "books" are made available.

One of the revolutionary packages for rainwear is seen in this attractive set-up paper box for merchandising Arrow Raingards.



A group of Spalding golf ball packages following the "family" idea by using black on all packages plus an additional color on each.

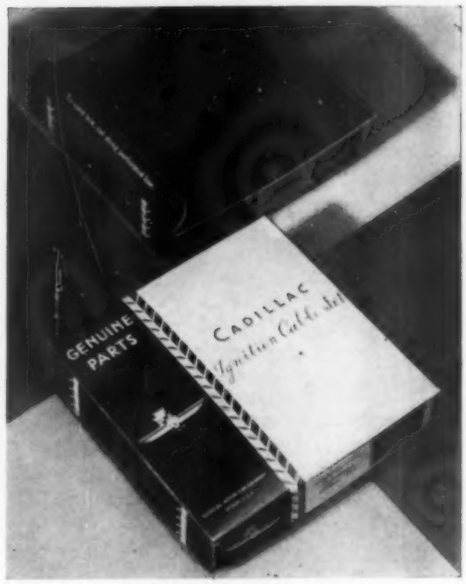
In packaging Raingards for regular consumption the Arrow concern adopted a set-up paper box, done in black glazed paper. The lids of the boxes are supplied in different colorings to give a contrasting color effect. The talon effect of the raincoat is reproduced on the front of the package with the name of the product stated simply without ostentation. Raingards retail for $10 the coat and therefore allows the manufacturer to delve into attractive packaging that might otherwise prove too expensive for a lower priced article.

Another manufacturer of rubber rainwear, the Rand Rubber Company, using the slogan "One-third of our weather is rainy," puts up its raincape line in small purse-like bags. Packaging of this nature makes for reduced stock space and appeals to consumers who dread heavy or bulky containers.

The Re-Use Package

One of the heaviest trends in packaging of late has been the growing use of the re-use package. That is, a container that may be diverted for other purposes once the original product has been disposed of for its intended purpose. The Munson Supply Company, New York City, manufacturers of rubber keys for typewriters and adding machines, made use of this idea when designing a new container for its "Feathertone" cushion keys, which are said to incorporate a resilient yet positive spring in addition to the live rubber tops.

Keeping in mind the re-use feature, in this instance aimed at office stenographers, the designer adopted a set-up paper box which incorporated a mirror placed against



LEFT: Two dozen rubber jar wrenches, a comparatively new item, are neatly arranged in this display carton featured by U. S. Rubber Co. CENTER: Raybestos-Manhattan applies package simplicity to secure this figure eight effect using an end-opened carton. RIGHT: Packard Electric Co. supplies Cadillac dealers with Ignition Cable Sets packaged in colorful metal edge boxes. Engravings, left and right, courtesy of National Metal Edge Box Company.

the bottom of the cover lid. Woman's vanity was not overlooked. The package finally evolved is covered with black and red waterproof pyroxylin coated paper, is lined with light buff waterproof paper, and comes equipped with a silver snap-button on the flap. The cover is hinged.

Proof of the pudding was revealed when the new package was presented on the market and soon accounted for 70% of Munson sales of typewriter keys, although the company has another style packaged much more simply, which retails for one dollar less per set. J. J. Brady, service manager, attributes sales success wholly to the package plus, of course, the quality of the rubber keys themselves. This container, incidentally, was awarded the first-place prize among set-up packages at the annual Packaging Convention conducted by the American Management Association.

The Peerless Key Company, Inc., also of New York City, manufacturers of the Peerless line of rubber typewriter keys, uses a set-up box, not quite so elaborate as the one above described, but still attractive enough to warrant attention. It is equipped with a hinged cover, with rubber keys neatly aligned within the package.

Golf balls, prior to the packaging era, were generally packed in dozen lots in a haphazard box of sorts, or were supplied in gross lots in shipping container form. There packaging ended. The evolution of golf ball packaging has been swift and thorough. One of the leading rubber manufacturers in this connection is the sporting house of A. G. Spalding & Brothers, New York City. Four different brands—Kro-Flite, Top-Flite, Par-Flite and Tournament—are put up in paper boxes with a "family" resemblance maintained in all cartons. With black as the predominating color the boxes are printed with orange, blue, green and red respectively, with design varying slightly on each separate brand backage. These cartons contain three and six golf balls each for consumer preference.

Other manufacturers of golf balls have followed the trend toward smaller cartons, attractively designed. The St. Mungo Manufacturing Company of America, Newark, N. J., is now making arrangements for its golf ball packages for next season, according to W. W. Mills, vice-president. The golf ball packages of the United States Rubber Company, in addition to its full line of packaged products, will be described in an early issue of THE RUBBER AGE.

Jar rubbers are still another item that has bowed before the packaging storm. Heretofore presented to the public from dealer shelves in plain, ordinary-appearing containers, they have now moved down to dealer counters via attractive packaging. In this connection rubber manufacturers producing this type of product have almost unanimously adopted the use of display containers in which are contained cartons of jar rubbers. These containers serve a double purpose, acting as both shipping containers which are later transformed into display units merely by folding back the cover of the container.

The Rubber Division of Jenkins Brothers, Bridgeport, Conn., utilize a display package for their "Pak-Tite" line of jar rubbers. Both the individual cartons and the container are printed in red and black with the former using a jar rubber design on the cover. When folded back the lid of the container forms an arc illustrative of a jar ring. Two dozen are packed to the container.

Royal Pe-Ko Edge jar rubbers, merchandised by the United States Rubber Company, New York City, also are supplied in display container form. These are printed in three colors. When the cover of the display carton is folded back a banner with the words—From a Perfect Seal—is formed, accentuated with the U. S. Rubber trademark.

Along the same line the United States Rubber Company recently introduced a new rubber product, Jar Wrenches, a kitchen tool for opening screw top jars and bottles, merchandised at 10 cents each. Two dozen of these wrenches are packed four deep in a display carton used to secure counter space in retail outlets. A sample wrench is supported on a hanger in front of the folded back cover. The hanger is formed by a tab pushed out from the lid itself.

Still another manufacturer using the display type of carton for the sale of jar rubbers is the Boston Woven Hose & Rubber Company, Cambridge, Mass., for their line of "Good Luck" rings. The approval of the Good Housekeeping Institute, expressed by their recognizable seal, occupies the front of the container the cover of which also folds back to form a display piece.

While discussing display pieces, it would be well to mention the new carton introduced last month by the Davidson Rubber Company, Boston, to merchandise its new line of No-Colic Screw-On Nipples. Lithographed in four colors, the display reproduces a large nipple and bottle neck to emphasize the screw-on feature. The base of the carton is die-cut to hold an actual nursing bottle with nipple. A cellophane window is used to permit inspection of the nipples, which come three to the carton. Sales price is prominent on the display.

For its Gold Seal line of friction tape the Rubber Division of Jenkins Brothers, mentioned above, also utilize a display container printed in red and gold which matches the design of the individual cartons containing the rolled tape. Two dozen are packed to the carton. When opened for display a reproduced roll of friction tape forms just above the folded cover to make for attractive eye-appealing attention.

Novelty, simple in purpose, is put to work by the Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., for packaging its V-belts for refrigerator and washing machines. The round belts are encircled with an opened carton-like affair forming a corset which forces the belt into the position of a figure eight. The belt is then simply hung on a hook ready for use or sale. Hooks are supplied by the rubber company.

In the field of mechanical rubber goods a complete packaging transformation has taken place. But five short years ago bulk packing was practically the only method used by manufacturers of these products. Once on the dealers' shelf the manufacturer rested until re-orders drifted in. That picture has changed. The current trend has taught the lesson that goods are not sold until the ultimate consumer parts with his dollar. Today's package must contribute some real help in selling.

Applying common sense psychology to the field of merchandising it is readily understandable that a well-dressed package, irrespective of the prosaic appeal of its content, works a benefit all the way along the line from manufacturer to ultimate consumer whether that consumer be dressed in tuxedo or overalls. The product receives more respect and higher value is placed on it than would be the case if it were poorly packaged, or put up in common place containers.

Manufacturers of mechanical rubber goods have realized this angle, and have put it to work. A number of them have adopted a style of package featured by the National Metal Edge Box Company of Philadelphia, which embraces the use of metal edges for strength and security. Supplied in "flats" the company furnishes simple machinery for completing packages of this nature on the manufacturers' premises, allowing him to work in packaging costs on his production line, if feasible.

The Garlock Packing Company, Palmyra, N. Y., one of the largest makers of mechanical rubber packings, solved the problem of effectively packaging its heavy packings, which often contain a lubricant that softens ordinary box board, by adopting a metal-edge package which is glassine lined on the inside and uses black glazed kraft lining on the outside. From a production angle the Garlock concern advises, "We save ourselves quite a few dollars in the course of a year, as we eliminate the labor and expense of wax paper wrapping and greatly reduce the gross shipping weight of our product."

(*Continued on page 286*)

BELOW: Munson "Feathertouch" rubber typewriter and adding machine keys are packaged in this re-use container. This package accounts for 70% of the company's sales which is based on quality of product plus enticing presentation. RIGHT: Johns-Manville Corporation uses metal edge boxes for its varied line of packings. Blue printings on a solid yellow box board gives these packages the effect of two-color printing. Engraving, courtesy of National Metal Edge Box Company.

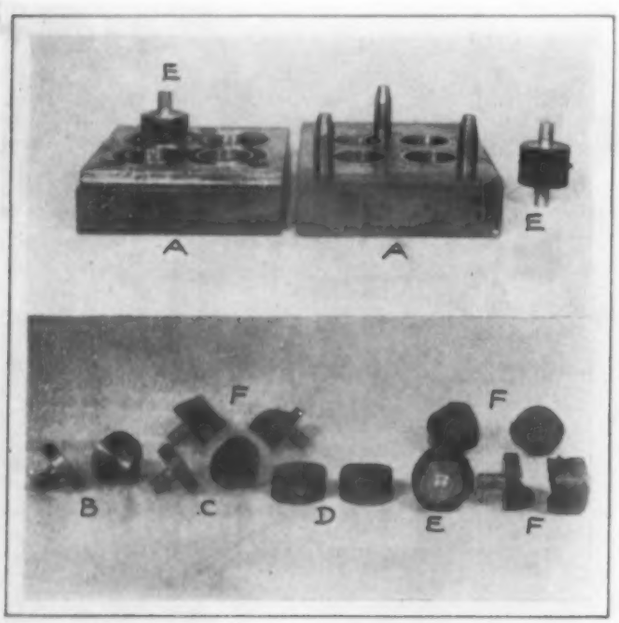
Proposed Method for Testing Adhesion of Rubber to Metal*

Standard Procedure Suggested by Authors by Which This Property of Adhesion of the Rubber to Metal Can Be Accurately Evaluated

By A. H. Flower and H. E. Wening
Inland Manufacturing Co., Dayton, Ohio

IN RECENT YEARS there has been a tremendous advance in the use of rubber-adhered-to-metal products. We feel that there should be some standard procedure by which this property of adhesion of the rubber to metal can be accurately evaluated. By the work of the automotive engineer, there has been developed an unlimited number of types or parts in which there is required a definite adhesion of rubber to metal. It is often stated that there is only one way of test and that is on the part itself. Since no two parts are alike, it then becomes necessary to devise equipment that will be applicable to the respective parts. This procedure is now being done and constitutes a method of control of the manufactured parts.

In the past, it was common practice to say, that the adhesion of the rubber to metal was equal to or greater than the strength of the rubber. As is generally known, it is possible to show apparent good adhesion of the rubber to the metal by reducing the quality of the rubber, and thereby easily making the adhesion greater than the strength of the rubber. In the event of the use of pure gum and high tensile stocks, which must be adhered to metal, it therefore becomes necessary to have some other means whereby the adhesion of the rubber to metal is recorded.



Mold and Test Pieces

Above: A—Mold. B—Test Piece. Below: A—Mold. B—Metal Test Pieces. C—Metal Test Pieces Cemented. D—Rubber Pellets. E—Finished Test Piece. F—Pieces After Testing.

We wish, therefore, to propose a method for the testing of the adhesion of rubber to metal. This method, to be worthy of proposal, must be easily duplicated and must be reported in terms which are in standard units. For the purpose of this test we wish to report our results in pounds per square inch pull necessary to obtain separation of a cylinder of rubber from metal parts having two square inches area. This pull is made at right angles to the adhered surface. These results are to be obtained by slowly separating the jaws of some testing machine at a definite speed, until there is a separation of the rubber from the metal or a rupture within the rubber itself.

Let us say at this time, that this article is not a dissertation on the means or methods, whereby adhesion of rubber to metal is obtained. In our work we have used a method of brass plating the metal parts and causing the rubber to be vulcanized to metal by confining the rubber in a steel mold, giving the necessary pressure and heat to cause vulcanization of rubber and thereby producing adhesion of rubber to the metal. There is no reason why this proposed method could not be used to determine the adhesion when there are other means used, such as plain metal, various cements or metallic oxides.

A description of the apparatus and equipment necessary is as follows:

A. Testing Machine. For our testing machine, we use an Olsen Testing Machine, size, 10,000 lbs. capacity, with a speed of jaw separation of four inches per minute. It is necessary to have the required fixtures for attaching the test piece to the machine and a recording device on the machine to read the total pounds pull.

B. Adhesion Test Piece.

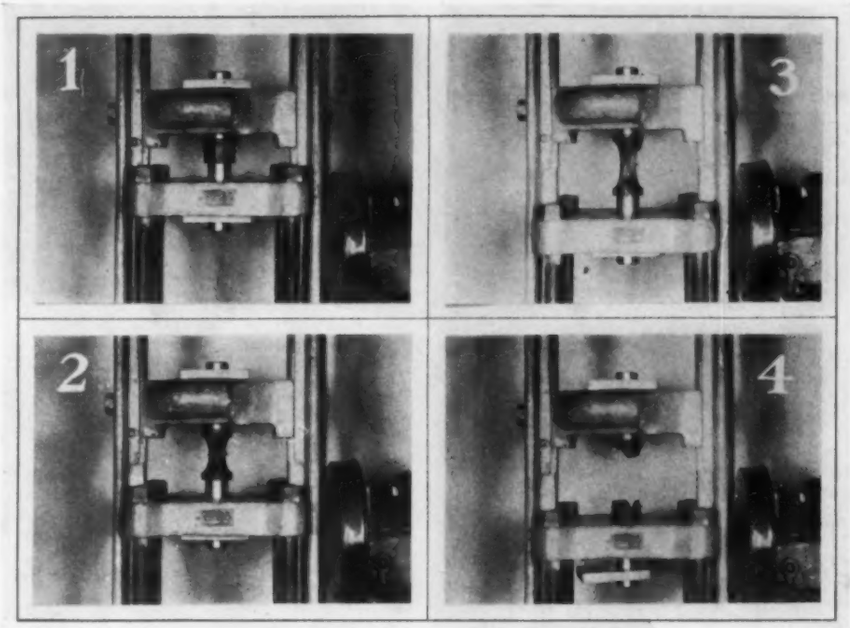
a. Shape—Circular shape of test piece was selected so as to be able to obtain uniform distribution of the pulling force.

b. Material—Made from S.A.E. 1020 Hot Rolled Steel Bar. This bar type enables one to obtain a piece with a standard machined smooth flat face and a stud at the back so as to be able to fasten the piece to a fixture on a testing machine.

c. Dimensions—The face area of the test piece is two square inches or 1.597 inches diameter. Thickness of the face plate is 0.375 inches. The stud dimensions are ½-inch diameter, 20 threads per inch, by ¾ inches in length.

C. Rubber Test Pieces. Here again we have the circular shape of two square inches or 1.597 inches diameter. Thickness of the rubber test pieces was chosen as ½ inch. It was thought that, possibly, the results would be affected

* Presented at the Annual Convention, American Society for Testing Materials, June 25, 1934, Atlantic City, N. J.



1—Adhesion Test Piece at Rest.

2—Adhesion Test Piece Under Tension.

3—Adhesion Test Piece Showing Start of Tear in the Rubber.

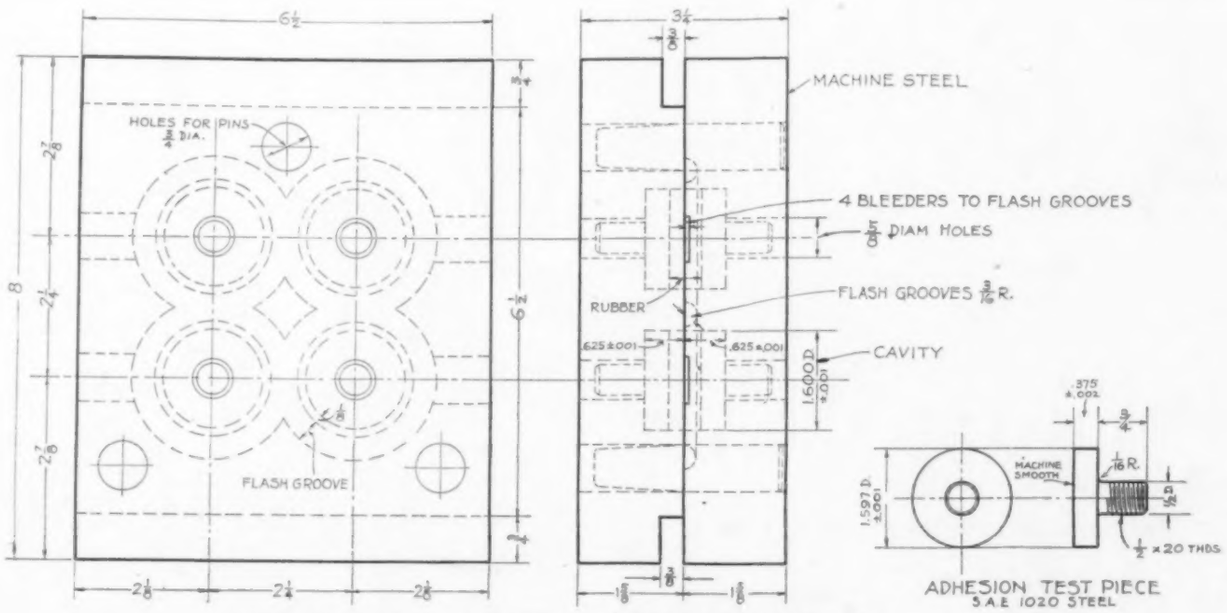
4—Adhesion Test Piece Showing Complete Separation of the Rubber.

by having too thick a rubber test piece and thereby causing undue necking of the rubber during the pulling; that is, reducing the cross-section area. So we have run checks using ¼ inch, ½ inch, and ¾ inch thickness, but we do not find any appreciable difference in the test results. All of our tests were made 24 hours after vulcanization.

In discussing our results, we have found that we obtain variation in the result figures from the following causes, namely, plating or cementing procedure and faulty loading. The loading of the stock must be such, so as to obtain maximum pressure of the rubber against the metal surface. A 1⅜-inch diameter by ¾-inch thick rubber loading piece was used in making the ½-inch test pieces. By using a standard steel and a machined smooth surface, we always have a surface of the metal which can be described and can be duplicated.

The circular shape was chosen, thereby eliminating sharp corners and giving uniform distribution of the pulling force. Our mold is so constructed that we obtain approximately 1½ thousandth of rubber over the edge of the metal, thereby eliminating the tearing of the rubber from the sharp edge of the metal. The volume of rubber tested is as large as feasible without running into such variation as stretch, cure throughout the piece and total pounds of pull.

The results, obtained by our method with these standard test pieces, parallel very well with those which we obtained on commercial pieces under production conditions. The test pieces show a general higher range of adhesion results than the production pieces, due no doubt to the fact that the test pieces were produced under more ideal conditions. The hardness of the rubber and the type of



Drawing Showing Details of Construction of Mold and Adhesion Test Piece

TABULATION OF TEST RESULTS ON VARIOUS FACTORY STOCKS

Name of Stock	Physical Properties Tens.	Elong.	Shore Hard.	Gauge Thickness of Rubber Test Pieces	Adhesion Results Total Pounds Pull	Pull in lbs. per sq. inch	Average Pull in lbs. per sq. inch
Bumper	1150#	450%	57	¼"	950	475	
					960	480	
					830	415	464
					970	485	
				½"	910	455	
					870	435	
					870	435	441
					880	440	
Engine Mounting.	3400#	650%	42	½"	2325	1162	
					2364	1182	1121
					2040	1020	
Auto Running Board Mat....	1250#	300%	80	½"	440	220	
					550	275	
					430	215	
					560	280	257
					490	245	
					680	340	
					445	223	
Engine Mounting.	3250#	800%	34	¼"	1180	590	
					1450	725	
					1180	590	644
					1340	670	
				½"	1290	645	
					1260	630	658
					1400	700	
				¾"	1710	855	
					1850	925	892
					1790	895	
Engine Mounting.	3500#	550%	52	¼"	1180	590	
					1940	952	
					1540	770	838
					2080	1040	
				½"	1960	980	
					1790	895	
					2652	1326	1120
					2562	1281	
				¾"	2870	1435	
					2630	1315	
					2130	1065	1232
					2230	1115	
Engine Mounting.	2550#	875%	32	½"	1280	640	
					1330	665	688
					1520	760	
Strip	2700#	725%	36	½"	290	145	
					400	200	
					320	160	196
					560	280	
Grommet	2440#	675%	40	½"	460	230	
					550	275	252
					500	250	
Pad	2600#	625%	42	½"	380	190	
					440	220	
					490	245	244
					640	320	
Spring Bumper...	3500#	600%	55	½"	1050	525	
					950	475	
					1100	550	490
					820	410	

acceleration used in the compounds, we found, gave us different ranges in the total pull results.

In conclusion, we wish to state that our incentives for proposing this method of testing the adhesion of rubber to metal are:

a. To assist the compounder in the development of adhesion stocks.

b. To present means whereby the control chemist may test factory batches as to adhesion variation.

c. To present some method whereby the production company may be able to assist the consumer in specifying the adhesion requirements.

Rubber Corset Sheeting Market

ALTHOUGH Argentina manufactures a certain amount of rubber sheeting, producers of corsets in that country prefer the products of the United States and Germany. An assistant trade commissioner, writing in the *Canadian Commercial Intelligence Journal* of July 14, states that the local product "contains too much free sulphur which blisters the skin during hot weather." Imports of made-up corsets are negligible due to the protective tariff. Because of these factors the Argentine offers a considerable market for rubber corset sheeting. Estimates place the annual consumption at from 60 to 70 metric tons.

Manufacturers of corsets show a decided preference to material from the United States, and only when there is an exceptional price advantage do they place the bulk of their business elsewhere. Recently Austrian and English sheetings have appeared in spots, but to a minor degree. Rubber sheetings from this country are considered superior to the German and is often sold without any liability to claims for imperfections in the material.

There are two classes of corset sheeting being sold in Argentina, namely plain rubber and rubber covered with cotton or silk knitted material, with the former type making up the bulk of the import trade. Plain rubber sheeting is required in various thicknesses, principally those of ½, ¾ and 1 millimetre. It is generally sold in two widths, the preferred being 45 centimetres, although 90 centimetres is readily accepted. In quoting on material manufacturers are urged to specify metric measurements rather than yard widths as is the custom of American sheeting producers. Rubber sheeting is always sold in rolls by weight, usually per kilogram.

Rubber sheeting covered with cotton or silk knitted material, a comparatively new item, is finding ready favor in the South American country. It is supplied in widths of 45, 90 and 135 centimetres. Quotations on this material-covered sheeting are made per yard. The duty on sheeting covered with silk on both sides is almost prohibitive, so that sheeting with cotton material on both sides is preferred, although there is some demand for sheeting cotton-lined on only one side, or cotton-lined on one side with silk on the other.

The bulk of the sheeting required calls for smooth surfaces with small outlet for moirée or figured finishes. Pale pink seems to be the only color preferred, with small demand for orange shades and other colors.

Terms usually quoted are cash against documents in Buenos Aires, the importer agreeing to purchase his exchange in the free market if on the arrival of the goods an exchange permit has not been secured. Importers will not always sign the latter agreement and some foreign firms with funds in Argentina quote in pesos on the basis of free market rates and protect themselves by buying the foreign exchange immediately after the order is placed. Such a quotation is generally accompanied by a demand for a peso deposit of a certain percentage of the order at the time the business is placed with the representative.

Prices on rubber corset sheeting are frequently quoted f.o.b. New York or Hamburg, although some American firms offer c.i.f. Buenos Aires prices. There has been a considerable rise in the current quotations during the past three months. Most of the sheeting is sold by local representatives in the Argentine who sell direct to corset manufacturers on a commission basis, usually 10 per cent. Some of the smaller corset manufacturers buy direct from wholesale importers who, in turn, either buy through a factory representative or direct from the foreign factory. In rare instances manufacturers send orders direct to the exporters.

Duties, figured in kilograms, are high, ranging from 2.50 paper pesos per kg. on ordinary rubber corset sheeting, which is equivalent at the current rate of exchange to 75c per kg., to 8.00 paper pesos per kg. for sheeting with silk on both sides, equivalent to $2.40 per kg.

Native Rubber Problems of the Dutch East Indies

Dutch Government Must Enforce Restriction Over Native Rubber Growers Owning 600 to 1000 Million Rubber Trees

By P. Scheffer

(The following article is reprinted from the July 16 issue of *The Financial News* which included a special supplement devoted to rubber and rubber products. The author is closely associated with the problems of the Dutch East Indies native planters and discusses them briefly in relation to the current restriction scheme in which the Netherlands plays a heavy role. Although the individual native planter produces but a minimum of world output, collectively the millions of rubber trees he owns represents a large percentage of the annual Dutch contribution.—Editor)

IN the history of the Dutch East Indies there is no other cultivation, the development and extension of which has such an influence on the domestic economy of the islands as that of rubber during the last thirty years.

This applies mainly to Sumatra and Borneo, and, in a lesser degree, to Java. The eastern side of the Archipelago, comprising the islands of Celebes, Bali and Lombok, the Timor group and Molukes, including New Guinea, have hardly been affected.

Up to now the Dutch Indian Government has not been able to carry out an adequate registration of the native plantations, but, in order to convey an idea of the problem, they have, on the eve of the debate on the rubber restriction plan in Parliament (Volksraad), made the official declaration that the number of rubber trees, presumably owned by the inland population, must be between 600 and 1,000 millions.

Producing Areas

Rubber grows best in the low and warm regions of Java, Sumatra and Borneo. Native plantations are to be found, in Government territory as well as in many self-governing native States, along the banks of every river and creek communicating with the sea, but the native holdings are mainly in the territories facing the Straits of Malacca and the southerly cup of the Sea of China between West Borneo and north-eastern coast of Sumatra. Native rubber plantations are also found in the interior, however. The inland native has tried this cultivation on the mountains, and has abandoned his attempts only at levels above 600 metres, for over this height latex is not yielded in sufficient quantities, as the temperature is too low. Otherwise rubber would probably have been planted at heights where rice can still be cultivated.

It may be noted that rice and rubber are intimately interconnected. In most regions of Sumatra and Borneo there is a form of rice cultivation known as "ladang cultivation," which means that the rice is grown on dry ground. This indispensable food-producing plant is put down on soil previously covered by old or young woods which have been cleared and burnt down. After the sowing of the rice, young rubber trees or seeds are planted rather closely together.

When the rice has been gathered the rubber plants remain, and although the ladang may be abandoned to the invading tropical vegetation, the rubber trees or seeds continue to grow. Later, the native owner returns and clears a small circle of ground around the hevea trees, now grown long and thin, to allow the light to reach them and promote their growth. If, after six or seven years, the trees have progressed sufficiently well to permit tapping, the ground is cleared more extensively, and where formerly there existed, apparently, a mere young wood, arises suddenly a rubber plantation, in the midst of which may be some primitive hut, in which the owner intends to reside for the time being or permanently.

A similar process to this has been repeated year after year on innumerable occasions, and every time a piece of jungle has been claimed for rice cultivation, it has developed subsequently into a rubber plantation. Little wonder, then, that some 600 to 1,000 million rubber trees are owned by the native population.

Who is to count these rubber trees and to register the plantations and their actual owners?

Near the centres of population where the plantations are better cultivated and probably more systematically established, this registration no doubt could be achieved, but as one penetrates inland the difficulties increase and the task verges on the impossible.

Typical Rubber Estate

This view is typical of the native rubber estates which abound in the Dutch East Indies.

But, for the purposes of the rubber regulation scheme, the Dutch Indian administrators will have to tackle the problem and bring it to a conclusion shortly, not only for the directly administrated territories, but also for the self-governing States, the rulers of which, from the Sultans

downwards without exception, are all interested in rubber. The prohibition against fresh planting, moreover, must be enforced.

In Java it is believed that it will be possible to allot production quotas to native growers individually, but for the outlying districts, this method, however desirable, cannot yet be applied.

Parliament, in the meantime, has rejected proposals for the levying of an export duty on native rubber, but has not yet reached a conclusion as to how restriction is to be effected.

At first, i.e., before the registration of the inland areas has been carried out sufficiently, it will only be possible to control the export of the outlying districts by means of an export duty or license system at the ports.

It now depends upon the perfection of the patrolling of the coastal area whether the customs barriers will be broken or not. It is contended, and with some reason, that with rising prices the natives will try to elude the restriction authorities. The Chinese "Tongkangmasters," to whom smuggling is not an unknown trade, will be ready, whether directed by Chinese traders on land or not, to take charge of native rubber after it has passed the three miles' limit, and to convey it to the consuming countries either by way of the Philippines or South China.

It is inconceivable that the International Rubber Regulation Committee is unaware of these difficulties. The Dutch Indian Government also knows well that too high a price for rubber would be fatal for the restriction scheme, which would be ruined by the smuggling of native rubber, however carefully and thoroughly the plans of the administrators of the scheme were laid. The pressure that can be exerted by the native productive capacity has been demonstrated in the past, and the implications of this will not be forgotten.

On the basis of certain calculations, the details of which cannot be discussed here, it is believed that under existing conditions a price of 20 cents per English pound, in Amsterdam, would mean that the average native smallholder would not obtain sufficient supplies of imported labor to work his plantations on the bagi-dua, or fifty-fifty system.

The entire structure of restriction would indeed be very greatly weakened if one had to reckon not only with the plantation owner, but with the hired laborers receiving their wages in kind.

I may conclude with the observation that the fears that native rubber will supplant the European plantation product appear to be groundless. The lessons given during the crisis of recent years, although they have proved costly, have compelled the European side of the industry to ride the storms before which the native producer has fled.

Packaging Rubber Products

(*Continued from page 281*)

Making its spool cable easier for the dealer to handle, and the consumer to inspect it, the Packard Electric Company, Warren, Ohio, uses a clever package in which spool cable is dispensed through a slot in the container. The length of the cable is drawn through the slot and cut off at the required length without disturbing the balance of the cable, and without opening or closing the package.

The Packard concern also supplies an ignition cable set for Cadillac cars to that company for distribution to its dealers and service houses. This set uses a metal edge box, with red printing on a solid black board, giving the effect of two colors with only one printing impression. The flaps on the lid of this carton permit sealing with gummed tape or wrapping making it pilfer-proof. The carton is made with boxboard of special finish permitting wiping with a damp cloth to restore bright freshness if the package remains in stock for an indefinite period.

Additional Package Uses

The Okonite Company, Passaic, N. J., put up their "Newtype" quality cable in the metal edge style of carton. The container, in this instance, is designed with lightning-like effects, in orange and black. The cable, rolled around a spindle, fits neatly into the package.

A line of packing compounds manufactured by the Allpax Company, Inc., Mamaroneck, N. Y., which is first put up in tin containers, is also supplied dealers in colorful cartons reinforced with metal edges. Here again some of the products contain a special lubricant which require the use of grease-proof interior finishes for protection against soiled boxes and labels. Use of folding boxes in this case solved the problem of saving stock room space much of which was lost when the concern used set-up boxes for their products. End-open cartons, supplied by the Philadelphia box manufacturer, on some sizes of the Allpax packing compounds, make it possible to take the contents out without removing the box from the shelf no matter where it may be in the stack of cartons.

The Johns-Manville Corporation utilizes the "family" idea of packages for its line of packings, including its rod, ring, tubular and coil packings. Using a solid deep yellow board a single printing impression in dark blue is made. Simple design predominates in all of these metal edge cartons, with the Johns-Manville trade-mark, placed in squares, covering the entire surface of the box. Brake lining is another J-M product put up in attractive folding box style.

The instances cited give conclusive proof that packaging has entered the rubber industry, in cases where its products lend themselves to packaging, and that it intends to stay is apparent. Since good packaging is synonymous with good merchandising rubber manufacturers would do well to pay more attention to the carriers which convey their merchandiseable products to the market.

Testing Rubber Content of Goldenrod

THE National Bureau of Standards, Washington, D. C., is cooperating with the Bureau of Plant Industry of the Department of Agriculture, which is carrying on the attempts started by the late Thomas A. Edison to produce a race of goldenrod that will contain a higher percentage of rubber than the average wild plants, according to the August Technical News Bulletin, issued by the first-mentioned government agency. Goldenrod is in the same plant family as Guayule.

Tests are being made on thousands of individual goldenrod plants to determine the rubber contents in order to find the most promising material on which to concentrate. Two methods are being checked, both of which are now in use for determining rubber content. One method takes a comparatively long time, with only a few analyses being completed every day. This method is believed to be accurate because the rubber is weighed directly.

The second method is more rapid; a chemist, using this latter method, can finish as many as 30 analyses per day. However, the rubber is not weighed, but is converted into a bromine compound. The amount of rubber is calculated by an empirical factor, from the quantity of bromine that enters into combination. The task of the National Bureau of Standards is to check the value of the empirical factors.

New Equipment

New Rubber Roller and Tube Grinder

THE LATEST ADDITION to the line of rubber cutting equipment manufactured by the Black Rock Manufacturing Company, Bridgeport, Conn., is their model 4-LM Rubber Roller and Tube Grinding Machine illustrated in Figure 1 herewith. This machine has been developed to meet a growing need for a compact production grinding machine for small cylindrical rubber articles such as tubes and various types of small rollers.

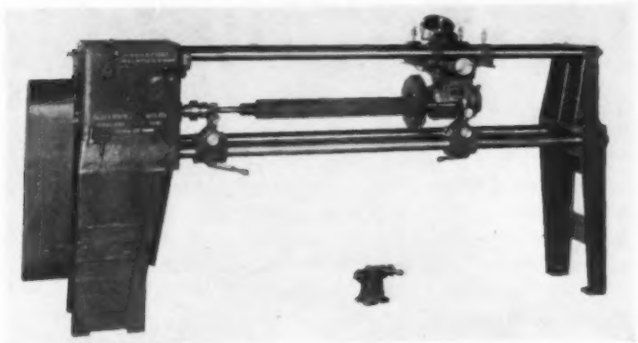


Figure 1

Model 4-LM Rubber Roller and Tube Grinding Machine, a compact production cutting machine for small cylindrical rubber articles.

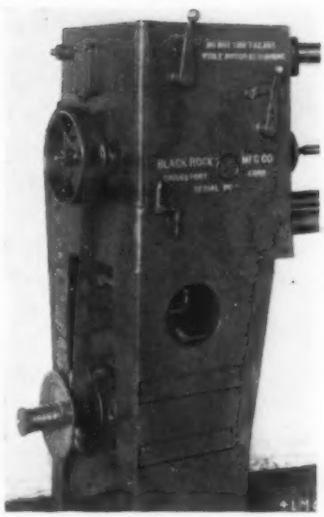


Figure 2

Driving motor and work speed control are mounted under the gear box legs, as may be seen here. The two feed change handles are also shown.

The grinder is equipped with a Reeves Variable V-Flat drive which provides an infinitely variable work speed control. It has six grinding feeds, thus making it adaptable for practically any kind of compounded stock.

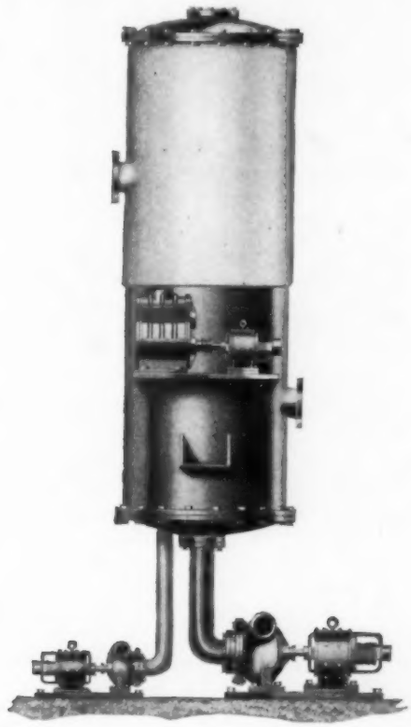
Attention has been given to safety and economy in the mounting of all moving parts. The driving motor and work speed control, for instance, are mounted under the gear box legs and the speed box control wheel is behind the small round door on the front leg, as shown in Figure 2. The same illustration also shows two feed change handles for controlling the 6 grinding carriage feeds. The mechanism and ball bearings enclosed in the gear box are automatically lubricated by an oil bath.

A feature of this machine is the mounting of the carriage above the rubber roll or tube being ground. By this means all foreign matter is prevented from getting into the moving parts, and the problem of lubrication is simplified. The necessary equipment is supplied with the machine for grinding the work on either its journals or its centers. For accuracy of finished product, arrangement is made so that the grinding wheel may pass any number of times across the face of the work.

The machine has a capacity of one-half to 8 inches diameter and 48 inches in length. It comes equipped with all the necessary parts such as spindle center, support bushings, driving dogs, driving chuck, grinding wheels, drive and grinding motors, wrenches, diamond for dressing wheels, etc.

Elliott Steam Operated Cooler

A NEW development of the Elliott Company, Pittsburgh, Penna., the Elliott Steam Operated Cooler, produces cooled water by means of flash or instantaneous evaporation under vacuum. It provides an economical means of providing cooled water for drinking purposes



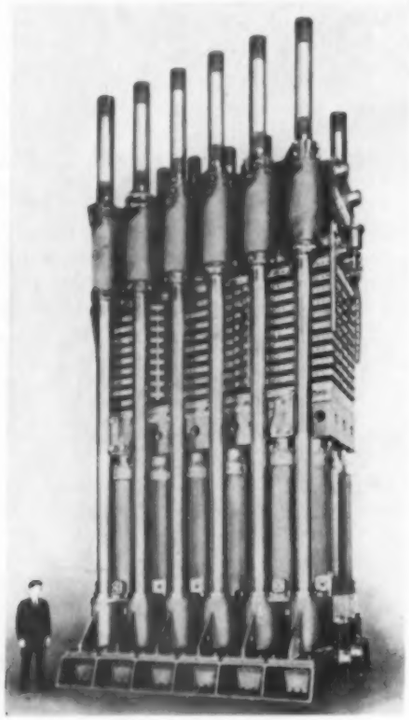
for manufacturing plants; cooled water for use in air coolers or air conditioning cabinets; and other applications where it is desirable to use water cooled to between 40 and 50 degrees Fahrenheit.

This steam cooler is fully contained within a single tank, requires floor space less than three feet square, and comes in three sizes up to 15 tons refrigeration capacity. It is operated on waste steam at three pounds per square inch to produce that capacity. It has no moving parts other than two pumps and uses no refrigerant other than water itself.

Hydraulic Steam Platen Press

A GIGANTIC steam platen press, complete with operating equipment, has just been built by the R. D. Wood Company, Philadelphia, Pa. This press, as installed, has 10 openings of 3″ each, but the design is such that this number can be increased to 20 by raising the top platen and installing additional steam plates. These are 54″ x 150″ and are supplied with steam under 750 lbs. per square

inch pressure to give the required curing temperature of 500° F. A special steam plate plugging method was developed in order to keep the platens tight under expansion and contraction.



The 12 press rams, 18" diameter by 60" stroke, are designed for 5000 lbs. per square inch working pressure. The press is closed by four jack rams, which permit the main rams to be filled from an overhead slack water filling tank, after which the high pressure up to 5000 lbs. is applied, the latter exerting a total pressure of 7500 tons on the steam platen area. The top and moving platens are made of steel castings and of such strength and rigidity that the maximum deflection under this load and when subjected to a temperature of 500° F. is less than .002" on any part of the pressure area.

To prevent distortion of the top and moving platens by heat, cooling plates and insulation material have been installed between these platens and adjacent steam plates. A special auxiliary hanging gear permits a quick and economic "bumping" as the operation of a single valve lever reduces the 3" openings only half an inch. The pressure water is supplied by two vertical triplex single acting power pumps. A hydro-pneumatic accumulator permits regulation of the hydraulic pressure anywhere between 1000 and 5000 lbs. per square inch. This pressure variation together with the valve layout which permits operation of the press with either 8 or 10, or all 12 rams, results in great flexibility of operation to suit various classes of work. The press cylinders are made of high tensile steel casting and the columns of heat treated alloy steel. All rams are made of close grained chrome nickel iron.

The press, complete with pressure pumps, hydro-pneumatic accumulator and tanks, sump pumps and tanks, air compressor, and all valves and piping, weighs 325 tons.

Toledo Printweigh Device

BASICALLY described as an accounting aid, the Toledo Scale Company, Toledo, Ohio, has introduced the Printweight, a device which automatically prints weight figures. This is said to be the first such device introduced. It eliminates the possibility of errors between receiving and shipping department and the accounting division. These errors usually occur in wrong figures and result in discrepancies in stock records.

The Printweight device prints the weight of any draft, at the time of weighing, on an inserted ticket or on a continuous strip, or on both simultaneously. Recording of the weight takes place in 1/10 of a second at the touch of a button. Control may be located on the scale itself or at any desired spot by remote control. Both gross and net weights are printed on the same ticket. The entire action is automatic. Aimed at the elimination of inventory losses, the device is attachable to any late model Toledo dial scale.

New Model Banbury Mixer

FARREL-BIRMINGHAM Company, Inc., Ansonia, Conn., has introduced a new laboratory Banbury Mixer with a capacity greater than the midget size and smaller than the No. 00, both of which are now being used in laboratory work. The new model is known as size "B."

Size "B" has a capacity of 1½ pounds of crude rubber and correspondingly greater capacity for stocks of higher specific gravity. It is useful for experimental mixing of small batches of rubber, asphaltic materials, paints, enamels, and other plastic materials. Designed on the same principle as the commercial Banburys, size "B" will produce mixes on an experimental scale comparable to those obtained in the larger production sizes, enabling the chemist to determine accurately the physical characteristics of new formulas before putting them into production.

The machine is designed to be mounted on a bench or table of suitable height for convenient operation. It is driven by a 7½ H.P. gear-motor, connected by a flexible coupling.

Both rotors of the Banbury, as well as the sides of the mixing chamber are provided with passages for the circulation of steam, water or other temperature controlling fluid. Batch ingredients are charged into an opening in the top of the machine, which is provided with a floating weight to keep the stock within the sphere of mixing action. Both sides of the mixing chamber can be opened for discharge of the mixed batch and for cleaning the interior of the chamber. Sheeting the stock after mixing is accomplished by a pair of rolls mounted on extensions of the rotor shafts. The connecting gears are machine cut with spur teeth and are entirely enclosed in a sheet metal guard, the lower half of which serves as a pan to hold the lubricant into which the gear teeth dip.

Editorial Comment

Labor Solution

WE concur with Henry H. Heimann, executive manager of the National Association of Credit Men, in his recent statement to the effect that "it is obvious we cannot afford to have the labor disturbances we have experienced through recent months." Especially is this tenet applicable to the rubber industry where strikes and walkouts have already affected such concerns as General Tire, Barr Rubber, American Hard Rubber, Hankins Rubber, and several others. But how avoid them?

Pointing out the fact that both labor and industry were intended to derive benefit from the NRA, Mr. Heimann feels that both company unions and industrial unions, in their present forms, are inadequate to avoid further disturbances. The former was founded because of employer's distrust of outside unions, while the leaders of the latter too often shape policies far more agreeable to themselves, than to their cohorts. He suggests that a three-point program be instituted including a joint effort between intelligent labor leaders and industrialists under government guidance, a central control board with public and governmental representation, and the inception of a code for labor unions under which penalties would apply for violation.

We are afraid that Mr. Heimann is pointing to utopia. While it might be possible to accomplish the first two suggestions in his program, we cannot conceive of labor unions operating under a special code which would, of necessity, incorporate certain fundamentals with which they consistently find fault. We heartily endorse any effort to put labor reins in the hands of the government. It is apparent that the present labor center, the American Federation of Labor, cannot hold its subsidiaries in check, as witnessed by the San Francisco fiasco. Perhaps a government body would be the means of better controlling the more radical elements in labor unions.

That some change is necessary in the present labor *versus* industry set-up is readily ascernible. Progressive labor no more wants industrial disturbances than does industry itself. The latter, after all, merely wants to live and let live, while the former knows prosperity for both is to be found in peaceable measures and not in labor warfare.

Without raising the cry of "reds" we question the necessity for the General Tire walk-out recently. Later facts revealed that the wage scale at the General factories was as high, and in some divisions, higher, than that of other rubber plants in Akron. And rubber workers have always been among the highest paid laborers in industry.

Were not the leaders of labor unions, as well as company officials, so set on receiving everything for which they ask, or the major portion of such requests, then strikes would probably be fewer and farther between.

Code Wage Provisions

APPARENTLY something is wrong with the wage provision for the rubber manufacturing industry, as provided for in the code for that industry. To date three rubber companies, all located in the southern section of the country, have made applications for exemptions from these wage provisions. The code entitles them to a hearing on these exemptions before the code administrator. The hearings are being conducted as this is being written.

A wage scale of 40 cents per hour minimum is included in the code, or the same rate as was paid in July, 1929, but in no case are wages less than 35 cents an hour to be paid. The McClaren Rubber Company, Charlotte, N. C.—the other two are the Holfast Rubber Company, Atlanta, and the Hagerstown Rubber Company, Inc., Hagerstown, Md.—requested that it be permitted to pay labor, less skilled than others, but 30 cents an hour. Protests against such permission was made by Lee Rubber & Tire Company and Pharis Tire & Rubber Company.

What's wrong with these code wage provisions? Certainly the majority of rubber workers receive a much higher wage scale, particularly in the larger factories in the mid-West. We know competition is exceptionally keen at present and therefore profits on products manufactured are held to narrow margins. But the wage scale, as provided in the code, is definitely not outrageously high. Why, then, the need for exemptions?

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Price Rise Coming

THE THIRD MONTH of restriction has now been passed. The first ten per cent cut in quota shipments went into effect in August. A graduated scale of reduced shipments now goes into effect, with each of the next few succeeding months seeing a lower rubber shipment. During this period of reduced shipments manufacturing activity, and therefore consumption, particularly in the United States, hits its annual low ebb. It is hoped that this ebb does not sink so low that it will not more than consume existing stocks on hand in rubber factories.

It is immediately apparent that rubber prices are bound to rise. We predict a price level around 20 to 25 cents per pound will be found within the next six to eight months.

The aforegoing paragraphs are not news. Consumers of crude rubber have had evidence presented to them from all sides that prices are bound to go up. We are adding our voice to the throng for the record, yet feel that too much optimism on increased prices on crude rubber prevails. Go up prices will, but we seriously doubt if we will ever again witness the exorbitant heights reached in 1927.

CURRENT • NEWS of the Rubber Industry

SEPTEMBER, 1934

Rubber Industry Code Authorities Besieged With Requests for Exemptions from Provisions

Formation of Rubber Labor Board Delayed By Protests from American Federation of Labor; Nine Footwear Companies Win Non Price-Filing

REALIGNMENT of code groupings, announced by the National Recovery Administration on August 27 as part of its program of improvement, in an effort to curtail both the number of operating codes and administrative branches, in no way affects the rubber industry. There are to be 22 industry groupings, classified as producing, fabricating and service industries, and distributing trades. The rubber trade merited an individual listing among the producing industries. However, an attempt is now extant to reduce the number of separate codes governing the rubber industry as a whole in order to place both the manufacturing and retailing angles of the business under a single code administrated by a single branch of the National Administration.

Hearings which resulted in complete revision of tire "floor prices" (details of which will be found elsewhere in this issue of THE RUBBER AGE) occupied the major portion of attention of the Rubber Industry Code Authorities last month. Prior to the announcement of the new prices, which recognize wide differentials, bitter words were voiced. General Johnson, NRA chief, was accused of granting special concessions to mail order houses without the knowledge of the tire industry.

This accusation was based on mail order catalogs which have recently appeared listing Fall prices. Tire prices in these catalogs were lower than the then agreed upon code prices. Revision of the "floor prices," which allow a 15% reduction to mail order houses selling by mail, settled this dispute, but not until after Senator Gerald P. Nye, of North Dakota, took up the cudgel in favor of the small tire manufacturer, charging the NRA with fostering "flagrant monopolies."

Rubber Labor Board Delayed

An indefinite delay in organizing the Rubber Industry Labor Board, of which Willard E. Hotchkiss, of Chicago, has been appointed permanent impartial chairman, was caused by continued protests on the part of the American Federation of Labor. It is understood that the labor organization objects particularly to placing control of the board under a permanent chairman with no continuing representative for labor.

Plans for complete formation of the labor board for the rubber industry call for one permanent chairman with labor and employer representatives acting on each individual case only.

Although rumor was rife last month that Dr. Hotchkiss had tendered his resignation as permanent chairman because of the A. F. of L. objection, both he and General Johnson denied any such allegations.

Hearings Arranged

Continued protests against code provisions and constant requests for exemptions are a daily occurrence at rubber code headquarters in Washington. A public hearing was held on August 24 on an application of the heel and sole division of the rubber manufacturing industry for approval of group customer classification definitions. Deputy Administrator E. D. Bransome presided.

The definitions advanced by this division included: (a) shoe manufacturers; (b) wholesale merchants; (c) mail order concerns and chain stores; (d) distributors or sales agents; (e) shoe repair shops, individual and multiple.

On August 25 approval was officially declared on the application of nine waterproof and canvas rubber-soled footwear manufacturers for exemption from the price-filing provisions of the rubber footwear division of the rubber manufacturing industry code. These nine firms were: Cambridge Rubber Company, Converse Rubber Company, Endicott-Johnson Corp., Firestone Footwear Company, Hood Rubber Company, Lambertville Rubber Company, Servus Rubber Company, Tyer Rubber Company, and the United States Rubber Company.

Further Request Refused

Application made by these nine companies requesting exemption from the clause concerned with cost recovery provisions was denied by code authorities.

Hearing was to have been held on September 11 in Washington on the application of the Inland Manufacturing Company, Dayton, Ohio, for exemption from provisions of the rubber manufacturing industry code. Request for such exemption is contained in the code itself. No decision was returned prior to press time.

Ask Wage Exemptions

A series of hearings are now being held on requests for exemptions from the wage schedule provisions of the code. Included among manufacturers making such applications are the McClaren Rubber Company, Charlotte, N. C.; M. S. Ferst, Ltd., Atlanta, Ga.; Hagerstown Rubber Company, Inc., Hagerstown, Md.; and others. It is a peculiar coincidence that the majority of concerns requesting exemptions from wage provisions are located in the southern section of the country. Prior to going to press with this issue of THE RUBBER AGE no decisions in these cases were handed down.

A.C.S. Meeting

The Rubber Division, A. C. S., conducted its program on Wednesday and Thursday, September 12 and 13, at Cleveland, Ohio. Sessions were held Wednesday morning and afternoon at the Higbee Auditorium, adjoining the Hotel Cleveland. The annual banquet was held Wednesday night in the Rainbow Room of the Hotel Carter. Thursday morning was devoted to further presentation of papers, with election of officers taking place at noon. John T. Blake's paper, "Studies in the Vulcanization of Rubber. VI. Thermochemistry," discussed data indicating that a small but definite heat evolution occurs during vulcanization with 2% sulphur and larger amounts evolved at higher percentages. (For abstracts of all other papers presented at the meeting see the August issue of THE RUBBER AGE.)

Canada Uses More Rubber

According to a report by the Canadian Department of Trade and Commerce last month, the Dominion imported more than 31,000,000 pounds of crude rubber during the first six months of 1934, representing a monetary value of $2,259,345. This total is almost double the amount imported into the provinces during the corresponding period of 1933, when 16,087,770 pounds were imported. Exports of rubber products manufactured by Canadian rubber factories accordingly increased in value from $3,125,719 in the first six months of 1933 to $5,902,236 for the same period of the current year.

TRUMP RUBBER COMPANY FILES DAMAGE CLAIMS

Trump Products Company, 11 Beech Street, Akron, formerly known as the Trump Brothers Rubber Company, filed suit on August 21, in the Common Pleas Court of Akron, against seven rubber manufacturers, alleging conspiracy to ruin its business, and seeking damages in the amount of $100,000. Fred G. Alderfer, president, filed the action.

The seven defendants are: Goodyear Tire & Rubber Company, Eclat Rubber Company, R. C. A. Rubber Company, all of Akron; Paine & Williams Company and R. H. Schwartz Rubber Company, both of Cleveland; Boston Woven Hose & Rubber Company, Boston; and Baldwin Rubber Company, Pontiac, Mich.

All seven manufacturers listed in the suit produce automobile replacement mats. It is charged that the Paine & Williams Company licensed the other six manufacturers to use its patent process in mat manufacture, and agreed with these licensees to hold the price of mats high enough so that the latter could pay a royalty of two cents per mat. The Trump concern, the petition states, was making mats under its own patents, and was selling fully 50% of the total output of automobile mats. The defendants are accused of forming an association and slashing prices below Trump's products, at the same time circulating information to the trade harmful to the Trump concern.

Specifically, the suit charges that "the defendants under the guise of a code authority exchanged prices, terms, and practice information with one another so as to create a monopoly in violation of the anti-trust laws." President Alderfer charges that this was done to "disrupt and destroy plaintiff's business." Because of these charges the Trump Products Company is seeking $100,000 damages.

O'NEIL, OF GENERAL TIRE, DEFENDS SMALL DEALERS

William O'Neil, president of General Tire & Rubber Company, Akron, resents the attitude said to be expressed in official circles at Washington, D. C., that independent tire dealers in this country "are through." Unofficial announcements have been made to the effect that company-owned retail outlets are better able to service the public in regard to its tire needs far better than the smaller tire dealers, and therefore the latter must drop out of the picture.

Attacking the quoted statement of Leon Henderson, one of the National Recovery Administrators, who is alleged to have stated that the "small retail tire dealer is through," Mr. O'Neil said, in part:

"The independent dealer is not through in the tire business. The gains which our company made in the first six months of this fiscal year, which were considerably above the average for the industry, should go definitely to prove that the independent dealer is not through as we have always been advocates of the independent dealer. The percentage of the tire business done by mail order houses in the past five years has been declining much faster than the decline for the whole industry, so it isn't going to be the mail order houses that will take the tire business.

"It's true that there has been an increase in the amount of tire business through factory-owned stores but I think we will find that this is not an economical way to distribute. It is very true that there are entirely too many small tire dealers—people recognized as dealers who buy less than $1,000 worth of business a year. This class of dealer ought to pass out.

"But why should Mr. Henderson come to the conclusion that the whole tire business is going to be regimented and that the whole system of distribution through independent dealers is going to be passed over to the chain stores, factory-owned stores and oil stations?

"Possibly, he gained this opinion from the fact that there are manufacturers who have been trying to carry water on both shoulders, opposing floor level prices because their large mass distributor customers were opposing them, and still trying to sell their own independent dealers, giving to mass distributors unfair differentials in price, not only on special brand tires but to oil companies on their own regularly advertised tires.

"One of the big mistakes statisticians have been making in this industry is in talking about unit sales, talking about Ford size tires, which sell from $4 to $10 each, and counting them equal to tires for large cars or for trucks. Thus, they will state that 11 per cent of tires are being sold through certain channels. They mean Ford size tires. Actually, the percentage of business done through those channels, in pounds, dollars or rubber is probably not over five percent."

U. S. Rubber Holds Convention

A national convention to determine manufacturing and merchandising policies for 1935 was held by the Mechanical Goods Division of the United States Rubber Company in Chicago, August 15-17. The meeting was under the direction of H. E. Smith, vice-president and general sales manager of production and sales of mechanical rubber goods, and H. A. Everlien, manager of branch sales.

Other executives present were W. Gussenhoven, assistant to the vice-president; W. H. Cobb, general factory manager, Passaic plant; C. W. Higbee, manager wire sales; Fred W. Strong, manager branch services; Walter Spoerl, assistant manager branch sales; Ralph C. Harden, manager packing sales; and Fred H. Pinkerton, manager sales promotion.

Rubber Factory for Durban

Dunlop Rubber Company, England, according to Sir Eric Geddes, chairman, will soon construct a complete factory for the manufacture of tires and general rubber goods at Durban, South Africa. The company estimates a cost approximating £50,000 for the construction of the factory. The Dunlop company recently purchased 9½ acres of land from the Durban Corporation.

Pneumatic Tires for Borden Milk Wagons

The old and the new—the horse on the left is rubber shod

The Borden's Farm Products Company, New York City, has launched an individual anti-noise campaign, by equipping their milk wagons with pneumatic tires, and putting rubber horseshoes on the horses. The first of these wagons was tested on August 30 with sound measurements made by engineers of Electrical Research Products, Inc. The tests showed a reduction in sound pressure on the ear of more than 90 per cent as compared with ordinary horse-drawn milk wagons.

Not only from the anti-noise factor is the Borden company interested in the use of rubber products in this instance. Longer life of both horses and vehicles are expected to be sufficient to offset the cost of equipment changes. Twenty of these pneumatic tired wagons are planned for the immediate future.

In comparison with horses walking while drawing steel-tired wagons as against pneumatic-tired wagons, the tests revealed that the former created a noise level of 85.4 decibels, equal to the amount of noise in the interior of a subway train, while the latter created a noise level of 62.1 decibels, approximating the noise level of a quiet residential street in mid-afternoon. Tests taken while the horses were trotting showed a similar ratio.

The patented rubber covered horse shoe used is half of the weight of a metal shoe. It is estimated that it will outwear the latter type three to one. A thin metal insert is entirely covered by rubber so that no metal can possibly come in contact with the road. Two years ago the Borden company adopted the use of rubber-cushioned bottle carriers. These reduced the noise caused by all-metal type carriers by 9 decibels.

CONSUMPTION IN JULY TOTALS 32,647 LONG TONS

Consumption of crude rubber by manufacturers in the United States for the month of July amounted to 32,647 long tons, which compares with 40,241 long tons for June. July consumption shows a decrease of 18.9% under June and 34.2% below July a year ago, according to statistics released by the Rubber Manufacturers Association. Consumption for July (1933) was reported to be 49,614 (revised) long tons.

Imports of crude rubber for July were 41,530 long tons, a decrease of 16.4% under June and 6.2% below July, 1933.

Total domestic stocks of crude rubber on hand July 31st were 364,883 long tons, which compares with June 30th stocks of 358,149 long tons. July 31st stocks show an increase of 1.9% above June 30th stocks, and 10.8% above stocks of July 31st.

Participants in the statistical compilation report 45,869 long tons of crude rubber afloat for the United States ports on July 31st, compared with 46,698 long tons afloat on June 30th, this year, and 57,435 long tons afloat on July 31, 1933.

July reclaimed rubber consumption is estimated to be 8,175 long tons, production 9,446 long tons, stocks on hand July 31st, 24,926 long tons.

RUBBER UNIONS PARLEY WITH TIRE FACTORIES

The United Rubberworkers council, through its several district locals, has opened parleys with tire factories in Akron, which is the first step in its program to negotiate with the entire rubber industry. Early demands, for seniority in layoffs and job distribution, were made last month by the presidents of the Goodrich, Goodyear and Firestone locals.

According to report, the union is proceeding very cautiously in its endeavour to secure agreements with the rubber industry as a whole, waiting until the complete formation of the Rubber Industry Labor Board, of which Dr. Willard E. Hotchkiss is chairman. Once the board has reached completion a drive for recognition of various points advanced by the union, including wages, hours, etc., will be carried on.

Individual negotiation is the only method open to the Rubberworkers council, since the Rubber Manufacturers Association decided, through A. L. Viles, general manager, two months ago, that it did not have the authority to agree to collective bargaining for the entire industry.

UNITED STATES TIRE CO. HITS EMPLOYMENT PEAK

The highest employment peak for the past decade—3,594 employees—has been reached by the United States Tire Company, Detroit. This peak was reached in mid-August. Employees of the company operate on a 30-hour week.

According to an official of the company it has disbursed "close to $15,000 in the last six months" to members of its mutual benefit organization of which "ninety-seven per cent of workers, office and executive included" are members. In the eighteen years that this organization has been operating its total disbursements have reached $350,000, according to report.

Rubber Caskets

Several years ago mention was made in these columns of the possibility of rubber coffins supplanting the wood, bronze and iron types in use. Now it is reported that a prominent rubber manufacturer of Akron is actually experimenting with rubber caskets. Several have already been made with engineers conducting tests for wear and moisture resistance. What next?

Introduce Cutting Dies Kit

Fremont Tool & Die Company, Fremont, Ohio, has introduced a set of floor cutting dies, adaptable for use on both felt back and all-rubber mats for all types of auto-

mobiles. The set is supplied in both cardboard box and leatherette case form. Four dies constitute the set, shaped to cut large circular holes, medium circles and slots, small circles and narrow slots, and straight cuts, squares and edges. Said to be made of high grade tool steels use of these dies eliminates the necessity for chalking the new mat from the old one, the latter serving as a guide in cutting. The manufacturer advises that they will also be found useful for the general cutting of cork, felt, washers, composition, packing, gasket material, linoleum and similar materials.

Seek Change in Management

A stockholders committee, consisting of four members, all of Albany, New York, is seeking the removal of Edmund S. Burke from the presidential post of the Kelly-Springfield Tire Company, N. Y., to which position he was elevated recently. Removal is also sought of several of Mr. Burke's associates, who came to the tire concern with him from the Fisk Rubber Company. The committee seeking the ouster is asking proxies to be voted at the annual meeting of stockholders or at a special meeting which is planned for the immediate future. A loss of $553,660 in the first half of the current year was believed to have led to the move.

Cabot Reports Striking Gas

Godfrey L. Cabot, Inc., carbon black manufacturers, report striking gas in their new field known as the Sidney White tract, in Boone County, West Virginia. An initial flow of 3,146,000 feet was followed by one of 6,415,000 feet of gas. These results were accomplished on the second well drilled in the territory.

TIRE PRODUCTION DROPS 17.1% BELOW JUNE, 1933

Shipments of pneumatic casings for the month of June amounted to 5,228,251 casings, a decrease of 1.9% below May, this year, and 17.1% below June (1933), according to statistics released by the Rubber Manufacturers Association, Inc.

Production of pneumatic casings for June were 4,342,170 casings, a decrease of 2.6% under May and 28.8% below June, 1933.

Pneumatic casings in the hands of manufacturers June 30th amounted to 10,219,360 units, a decrease of 8.2% below May 31, 1934 but were 54.5% above stocks June 30, 1933.

The actual figures are as follows:

PNEUMATIC CASINGS

	Shipments	*Production*	*Inventory*
June, 1934	5,228,251	4,342,170	10,219,360
May, 1934	5,331,699	4,456,223	11,126,567
June, 1933	6,305,454	6,099,924	6,614,940

BRITISH OWNERSHIP FOR ENGLISH RUBBER FIRM

According to an extract from the *London Times* of August 4 the Rubber Regenerating Company, Ltd., of Trafford Park, Manchester, England, is shortly to pass into complete British ownership. The concern, which has acted as European agent for the Naugatuck Chemical Company, for many years, is one of the largest manufacturers of reclaimed rubber in England. Remaining under the same management it will continue to represent Naugatuck.

Acquisition by the company of the "Solvent" reclaim patents and business of the Thames Hard Rubber Corporation, Ltd., and Kaycee, Ltd., was also indicated. The Kaycee plant will be devoted to the manufacture of solvent used in the acquired patents in addition to the development of several new lines of rubber chemicals. "Solvent" reclaim, also known as "Kaycee" reclaim, was developed by the Thames concern during the past two years, and has established a strong position for itself in new fields rather than as a competitive product of alkali reclaims, particularly where conservation of the cotton in waste tires is an advantage.

APPROVE ALTERNATES FOR COMPLAINT GROUP

Approval of alternates appointed to the trade practice complaints committee established under the Rubber Tire Manufacturing Industry Code was announced on August 22 by the National Recovery Administration.

The alternates named were: W. C. Behoteguy, B. F. Goodrich Company, alternate for R. S. Wilson; E. S. Burke, Kelly-Springfield Tire Company, for L. R. Jackson; A. A. Garthwaite, Lee Tire & Rubber Company, for I. Eisbrouch; J. P. Seiberling, Seiberling Rubber Company, for J. W. Whitehead; and W. O. Rutherford, Pennsylvania Rubber Company, for C. Borland.

No alternate has been named for A. L. Viles, general manager of the Rubber Manufacturers Association, who serves as chairman of the complaint committee. Mr. Viles serves without vote.

STRIKE UNSETTLED AT AMERICAN HARD RUBBER

With efforts still being made to settle the differences between the American Hard Rubber Company, Akron, and its employees, the strike, called on August 21, is still unsettled. This is the second walk-out experienced by the rubber company, the first in April having been settled after a four day strike, with a wage adjustment in favor of the workers.

According to leaders of the strike, workers demand pay increases ranging from 3 to 10 cents an hour, time and a half for overtime, a six-hour day on a six day week (they were working eight hours a day), vacations with pay, seniority rights in the case of layoffs and abolishment of the company union.

Prior to going to press rumors were rife that negotiators would soon be successful in ironing out the differences that caused the strike. It was not learned, however, who such negotiators were although George B. Roberts, a representative of the American Federation of Labor stated that the workers were ready to meet with plant officers "at any time."

NATIONAL TIRE FACTORY MAY RESUME OPERATIONS

Meetings are being held among all parties and equities involved in the failure, several years ago, of the National Tire Company, East Palestine, Ohio. An organization known as the Superflax Tire Company, took over the plant in mid-1932, but did not prove successful in operation. The plant, at that time, had been closed for more than five years, was equipped with new machinery and began production with about 50 employees. It closed again shortly thereafter.

A meeting held in East Palestine on August 14 in the offices of Attorney John E. Bauknecht, revealed a harmonious attempt to meet the requirements laid down by the Federal Trade Commission and New York banking interests, in order to reopen the plant. Results are expected within a reasonable period. C. H. Morris, of Morris & Van Wormer, New York City, represented banking interests involved in the factory.

Uses 300 Rubber Parts

R. K. Lee, of the Chrysler Motors Research division, Chrysler Corporation, advises that the new Airflow De Soto automobile utilizes more than 300 rubber parts in its construction.

New Rubber Manufacturer

Specializing in the manufacture of plumbers' rubber goods, including tank balls and force cups, the Franklin Rubber Corporation has been formed at Doylestown, Penna. J. A. MacEwan, formerly associated with the Hodgman Rubber Company, is general manager.

Navy Contract for Republic

Republic Rubber Company, Youngstown, Ohio, has been awarded a contract calling for the delivery of $30,000 worth of rubber hose to the United States Navy department. The order was received on August 13, with delivery scheduled in forty days to various naval points.

Firestone Gardens

In the triangle formed by the Firestone factory and exhibition building on the World's Fair Grounds, Chicago, is a small garden cultivated by the company, the center attraction of which is the company's "mark of quality," as seen in the above reproduction. The border and the letter "F" are made up of 1,190 orange lantana, and the field is composed of 2,675 blue ageratums, making a complete total of 3,865 plants. Thousands of people pass this garden spot daily.

GENERAL TIRE EXPORTS RETURNED TO AKRON

The export business of the General Tire & Rubber Company, Akron, which was transferred to the Toronto, Canada, plant during the recent labor disturbance at the home factory, has been returned to Akron, according to J. A. Andreoli, vice-president and manager of the concern's export division.

Return of this business to the Akron factories will result in increased production and employment. The company also reports steadily mounting production at its Mexico City factory which it acquired some time ago after taking over manufacturing control from the Campania Hulera el Popo.

Rubber Cement Factory Burns

Fed by chemicals fire wiped out the factory of the Columbia Rubber Cement Company located on Ingraham Street, in Brooklyn, N. Y., on August 26. The explosions caused by the chemicals tore off the roof of the building. Although no official report of the damage was announced, the building was completely destroyed by the flames.

Plan Full Time Schedule

A recent release from the United States Rubber Company predicts the return of 2,000 employees to full time, soon. They are now working on a three-day work week. Increased orders for lastex used in rubberized garments were responsible for the prediction, according to the company.

RUBBER EMPLOYEES HOLD ANNUAL OUTINGS

Rubber manufacturing employees, in various sections of the country, held their annual Summer outings last month. More than 50,000 employees of the Goodyear Tire & Rubber Company, Akron, journeyed to Euclid Beach, Cleveland, to attend the company's frolic. Paul W. Litchfield, president, was the guest of honor.

An all-day picnic was held on August 25 for the employees of the United States Tire Company, Detroit, and their families, at Jefferson Beach, that city. Some 3000 people witnessed the sporting events which featured the day's program.

Fifteen hundred persons attended the picnic at Chippewa Lake Park, on August 25, held for the employees of the Seiberling Latex Products Company, Barberton, Ohio, and participated in the program of sports, contests and amusements.

The Mishawaka Rubber and Woolen Company, Mishawaka, Indiana, also staged its annual employee picnic last month, which was attended by well over 10,000 men, women and children. E. J. W. Fink, president of the concern, also was present.

ONE THIRD OF DEALERS SELL MAJORITY OF TIRES

According to a report made to the United States Department of Commerce by tire dealers throughout the country, less than one-third of all tire dealers do approximately 84% of the total tire business from a retail angle each year. This estimate is based on the report of 21,000 retail tire dealers reporting on their stocks of tires and tubes on hand in April of this year to the Department of Commerce.

Statisticians of the rubber industry, using this report as a base, estimate that there are approximately 50,000 dealers now engaged in selling tires throughout the country. Of this number it is estimated that 15,500 are so-termed "quality" dealers. About 69% of the dealers reporting had less than 50 tire casings on hand in stock.

Report on Rubber Production

According to a release from the United States Rubber Company, it produced 49,000,000 pounds of rubber on its plantations in Sumatra and Malaya during 1933. This amount is claimed to be three times greater than that produced by all other American rubber companies combined. The plantations cover 135,000 acres, of which 99,000 are planted and 83,000 in tapping.

Factory Starts Production

Actual production has been started in the factory of the Independence Rubber Company, which recently established a factory at Fostoria, Ohio. The company is said to be producing 500 pairs of rubber gloves per day. An increase in employee personnel is expected.

School Named for Goodrich

Termed the Benjamin F. Goodrich, a new high school has been opened in Akron, commemorating the memory of the famed rubber manufacturer.

Financial News

$778,200 OLD FISK ASSETS SHARED BY CREDITORS

Final disposition of the assets of the old Fisk Rubber Company, Chicopee Falls, Mass., was ordered on August 21 by Federal Judge Hugh D. McLellan, of Boston. Total remaining assets of the former Fisk concern amounted to $778,200 which was to be distributed among the bondholders, noteholders and other creditors involved in the failure of the company. Petition for disposition of the remaining assets was brought by Attorney John T. Noonan, counsel for the Chase National Bank of New York. The bank, as trustee, brought the original petition for an equity receivership for the Fisk organization.

The assets were to be divided as follows: bondholders who did not participate in a former partial distribution were to receive $673.17 for each $1,000, plus $26.20 for each $40 coupon; noteholders $581.69 for each $1,000; bondholders who participated in former distributions, $272.48 for each $1000 bond, plus $10.60 for each $40 coupon; noteholders, in the same category, $180.77 for each $1,000.

Disposition of these remaining old Fisk Rubber Company assets practically winds up the receivership. The new Fisk Rubber Corporation, it should be noted, is in no way involved in these proceedings.

GOODRICH SHOWS PROFIT FOR SIX MONTH PERIOD

B. F. Goodrich Company, Akron, and subsidiaries, reported a net profit of $1,486,956 for the six month period ending June 30, 1934, after full provision for depreciation, interest and income taxes. This total includes a profit of $479,547 from the sale of securities plus a profit of $22,149 from the purchase of the company's bonds and debentures. It also absorbs a loss of $93,058 in foreign exchange.

Net profit for the corresponding six month period in 1933 was only $870,577, which included a $2,303,798 profit from the purchase of the company's bonds and debentures plus $746,125 appreciation in foreign exchange. Current assets amounted to $57,370,532 on June 30, 1934, against liabilities of $9,556,666, a ratio of six to one.

$2,617,197 NET EARNINGS REPORTED BY GOODYEAR

Net profit of $2,617,197 for the six months ending June 30, 1934, has been reported by the Goodyear Tire & Rubber Company, Akron. This compares with a loss of $738,036 for the corresponding period in the previous year. The profit stated is arrived at after depreciation, interest, federal taxes, etc.

The Goodyear six-month profit is equivalent to $3.44 a share on 759,720 no-par shares of $7.00 first preferred stock. Current assets as of June 30 including $39,470,560 in cash and government securities amounted to $111,215,638, against current liabilities of $14,176,770. The company has added approximately nine million dollars to its current assets over the 1933 amount.

A dividend of $1 on the $7 cumulative first preferred stock, payable on October 1 to stock of record September 1, was declared by Goodyear directors. Similar amounts were paid in the last two quarters. In a statement to stockholders, P. W. Litchfield, president of the concern, revealed that the company was registering all Goodyear securities under the Securities Exchange Act of 1934.

United Carbon to Pay $2.40

Directors of the United Carbon Company declared a quarterly dividend of 60c on the common stock on August 16. This places the issue on a $2.40 annual basis. The dividend just announced is payable on October 1.

Current assets of the company on June 30, 1934, were shown at $3,391,690, which included $1,486,358 in cash. Current liabilities were listed at $487,062. Preferred stock was retired on July 2, 1934, the company borrowing approximately one million dollars for this purpose, issuing notes for the loan maturing in one and two years, according to an announcement to stockholders made by Oscar Nelson, president of the concern.

Raybestos-Manhattan Earnings

Raybestos-Manhattan, Inc., and subsidiaries, earned net income of $719,831.98 for the six months ending June 30, 1934. This is equivalent to $1.12 per share. A payment of only 36c per share was made for the corresponding period of 1933. The balance sheet at June 30, 1934, showed total assets of $16,525,114 which is equivalent to eleven times the current liabilities of $715,026.

A dividend of 25c, payable September 14 to stock of record August 31, was declared by Raybestos-Manhattan directors. This is the same amount paid in the two preceding quarters.

Kelly-Springfield Has Loss

Kelly-Springfield Tire Company, New York City, shows a loss of $342,949 for the six month period ending June 30, 1934. This amount is less interest of $78,464 on 6 per cent notes but before deducting $210,710 provision for depreciation. The company showed a loss from operations of $573,838 in the same period last year.

Edmund S. Burke, recently elected to the presidency of the company, stated: "Since June 30 all outstanding bank loans have been paid. Total current assets now amount to $6,758,242, with total current liabilities at $1,117,597."

Baldwin Reports Net Income

Baldwin Rubber Company, Pontiac, Michigan, reports net income of $100.607 for the six month period just ended. For the second quarter net income was shown at $42,033, which compares with $58,574 in the preceding quarter.

NEW JERSEY ZINC CO. PAYS 51c PER SHARE

New Jersey Zinc Company, New York City, reports net income of $994,304 for the quarter ending June 30, 1934, equivalent to 51c a share on 1,963,264 shares (par $25) of stock. The net figure is arrived at after deducting depreciation, depletion, taxes, contingencies, etc.

This compares with a payment of 55c a share in the preceding quarter and 48c a share in the June quarter of 1933. For six months ending June 30 the net income for the company amounted to $2,086,511 after all charges were deducted, equal to $1.06 a share, which compares with 70c a share in the first half of 1933.

Increases Capitalization

United States Rubber Products, Inc., of New York City, filed a certificate of increase in capital stock at Dover, Delaware, on August 23, from $25,000 to $15,000,000, also changing its name to United States Rubber Products, Inc., New York. The company was first incorporated in 1928 as the United States Rubber Company, Inc., and changed its name twice before the current one was adopted. It is a subsidiary of the United States Rubber Company.

St. Joseph Lead's Dividend

Payment of a 10 cents dividend to stock of record September 7, payable September 20, was declared by directors of the St. Joseph Lead Company, New York City, manufacturers of zinc oxide. The dividend was declared on August 21. Similar payment was made in the preceding quarter.

RUBBER FACTORIES SET IN TEXTILE WAR STRIKE

The textile strike, now being waged throughout the country, finds rubber manufacturers ready to stand a long siege in the event that workers at their mills, in the case of those operating their own mills, or workers at mills other than their own, join the general strike planned by the unions involved. Reports from Akron are to the effect that rubber factories in that center are prepared to continue present production schedules for the next 30 to 60 days with current stock on hand.

There are two factors in favor or rubber factories in Akron, one being sufficient fabric stock on hand, and the other the fact that the August inventory of 12,000,000 casings was the largest in the history of the tire business.

Goodyear, Goodrich, Firestone and General all operate their own mills, eight *en toto*, and reports indicated that all four factories were confident employes at their plants would not join the textile strike which, at this writing, is said to embrace fully 50% of all workers in the industry. The mills owned and operated by these tire companies are mostly in the South, the most affected area, while Goodyear and Firestone both also operate mills at New Bedford, Massachusetts.

Company owned mills, it is stated, supply approximately 60 per cent of the tire factories' requirements for fabrics.

New Tire Prices Introduced by Administration With Majority of "Floors" Slightly Reduced

New Range of Prices Recognizes Necessity for Different Minimum Prices Based on Groups of Distributors — Price-cutting Hoped Halted

NEW prices on tires effective August 27th, and continuing until October 1, 1934, were announced on August 26 by the National Recovery Administration. The price revisions were the result of a series of hearings held at Washington, starting on August 3, based on complaints received from smaller tire manufacturers who sought an increase in "floor prices." However, the revised schedule did not materially increase the "floors," with the exception of three instances, but reduced them in eleven cases in favor of the smaller manufacturers making lesser known tires.

Price revisions, as announced, are not market or maximum prices, but are intended as levels below which destructive price-cutting will be recognized by the Administration. Despite the increased cost of crude rubber and cotton the prices were not revised upward, but were established with full recognition of the necessity for different minimum prices for different groups of distributors.

Minimum prices were established last May in an attempt to halt a destructive price war. The volume business was found to be drifting steadily toward company-owned stores, filling stations and mass distributors. The prices established in May were intended to rectify this situation and place more tire business in the hands of smaller retailers. Present prices are also aimed at this achievement and are based on former agreed-upon differentials plus the experience gained in the past several months.

The strain placed upon small tire manufacturers and small retailers is said to be considerably eased by the new price levels, and yet they permit the economies of efficient distribution to be passed on to consumers. Especially do consumers in the farm areas, victims of the drought period, benefit from the reductions in floor prices, because of the differential recognized in the case of mail-order organizations.

Five Groups Recognized

Five main groups of retail tire distributors, recognized in the original plan, remain the basis on which current price differentials are based. These divisions, with their explanations, are as follows:

Division I—Tires and tubes bearing the Firestone, Goodrich, Goodyear, General and United States names in any form. This group represents the five leading tire manufacturers whose products are nationally advertised and have wide consumer acceptance. Increases in this division were 11% for first line tires, 6% for second line, and no increase in third line or truck tires.

Division II—Private brand tires sold through outlets whose principal line of business is the marketing of petroleum products. Floor prices were advanced 4% for these outlets which sell only first line tires. They represent filling stations primarily.

Division III—(a) Tires and tubes sold through the retail stores of Sears, Roebuck & Company and Montgomery Ward & Company.

EFFECT OF CHANGE IN "FLOOR" ON 4-PLY 4:75 x 19 TIRES

ON FIRST LINE

	Present Floor	New Floor	Percentage Change
Division I	6.70	7.45	+ 11
Division II	6.70	6.95	+ 4
Division III	6.70	6.70	0
Division IV	6.70	6.45	— 3.5
Division V	6.70	5.75	...

ON SECOND LINE

Division I	6.10	6.45	+ 6
Division II	6.10	...	...
Division III	6.10	6.10	0
Division IV	6.10	5.85	— 4
Division V	6.10	5.10	...

ON THIRD LINE

Division I	5.20	5.20	0
Division II	...	...	...
Division III	5.20	4.95	— 5
Division IV	5.20	4.70	— 10
Division V	5.20	4.20	...

EFFECT OF CHANGE IN "FLOOR" ON 600 x 20 FIRST LINE PNEUMATIC TRUCK AND BUS CASINGS

	Present Floor	New Floor	Percentage Change
Division I	14.20	14.20	0
Division II	14.20	13.75	— 3
Division III	14.20	13.50	— 5
Division IV	14.20	13.05	— 8
Division V	14.20	12.65	...

(b) Tires and tubes bearing the names of Badger, Brunswick, Diamond, Federal, G & J, Gillettes, Hood, Marathon, Miller and Yale. These ten brands are produced by subsidiary companies listed in the first division.

(c) Tires and tubes bearing the following names: Cooper, Dayton, Dunlop, Falls, Fisk, Gates, Giant, Inland, Kelly-Springfield, Lee, McClaren, Mansfield, Master, Mohawk, Pennsylvania, Pharis and Seiberling. These fifteen brands are produced by medium-sized manufacturers. Floor prices of first and second line tires remain unchanged while a 5% reduction applies to third line and truck tires.

Division IV—Tires and tubes not represented in any other division. This includes 22 small manufacturers and the chain automotive accessory supply stores, distributing private brands. Reductions were made in all tire types in this division.

Division V—Tires and tubes sold to consumers through the medium of regularly issued catalogs, when orders are received by mail and telegraph only, and when delivery is made by mail, express or freight only. This pertains to all tire manufacturers who sell direct to consumers by the issuance of regular catalogs. Price reductions averaging 15% on popular size tires were made, with the largest reductions in third line tires. The large reductions were made because of the recognition of money-orders, mounting, mail involved, etc.

In all, price reductions occur in eleven instances, with upward trends in only three cases. Recognition was made by the Administration of practically every known form of tire distribution with price differentials arrived at accordingly.

Tire Makers Object

Shortly after the announcement of the revised prices, a group of tire makers and dealers stormed into Washington to make vigorous protest against the new scale. Among the tire makers raising their voices in protest were General, Dayton Rubber, Goodrich, and Goodyear. These manufacturers, and several dealers, went into an immediate huddle with Deputy Administrator E. D. Bransome.

What the protestants against the newly instituted prices want is a complete revision of current codes of fair practice, nine in all, in the rubber industry. One plan advanced calls for the writing of a single vertical document which would embrace both the manufacturers and retailers under a joint code authority. Reports from attendants at the sessions with Mr. Bransome indicate that this plan, or one of similar nature and intent, is being favorably considered by the Administration.

According to some tire executives the adoption of a single vertical code would eliminate overlapping fair trade practice problems of both dealer and tire manufacturer. It would also make the problem of enforcement less weighty, it is claimed.

On the subject of enforcement, Martin Barry, president of the National Tire & Battery Association, stated that "the great need is in enforcement machinery." Barry claimed that dealers in Baltimore were not made cognizant of the new price levels until several days after they went into effect. In his official capacity he "was willing to give the whole set-up a trial for the next thirty days."

The Price Situation

Despite the fact that the new prices supposedly went into effect on September 3, and were to continue until October 1, it is believed that little effort will be made by the industry to comply with them, pending revisions now under discussion. Under the NRA system, formal protestations against a code, or a revised list of prices, automatically holds up enforcement for at least a ten-day period pending a hearing.

While waiting the outcome of the two-day session held with Deputy Administrator Bransome, rubber manufacturers believe that the Code Authority will approve the advanced proposal to assess rubber products at the point of manufacture. This action would solve the problem of raising funds to carry on code enforcement and observance work.

The plan introduced by a group of tire manufacturers to set up trading areas for tire dealers of the country with code administrative officials for each area, was believed to be receiving very little attention from code officials at Washington, because it was deemed both too cumbersome and too expensive.

To Resume Goodyear Hearings

Hearings on the alleged monopoly suit brought by the Federal Trade Commission against the Goodyear Tire & Rubber Company, which were adjourned for a three week respite on August 13, were to have been resumed in Chicago on September 11. Proceedings prior to the adjournment were occupied with tire dealer defense testimony introduced by Goodyear attorneys in an endeavor to prove that Sears-Roebuck competition was not felt as keenly by dealers as the Commission charges. The suit is based on Goodyear's tire contract with Sears, Roebuck & Company.

NEW ENGLAND NEWS

Employees of Goodyear Rubber Sundries, Inc., New Haven, Conn., held their annual outing August 11 at Lake Compounce, Bristol, with about 1,000 attending, including families. An elaborate sports program was staged. James A. Murray, Sr., president and treasurer, and James A. Murray, Jr., vice-president and secretary, attended.

The Kerite Insulated Wire & Cable Co., Seymour, Conn., encountered operating difficulty of an unusual kind August 11 when oil got into its testing tanks from the surface of an adjacent pond. The oil was from a wrecked tank truck, hundreds of gallons pouring into the pond.

Upon application of the Air Equipment Corp., J. W. Cooper and Frederick Rosenthal have been appointed receivers for the Rubbercraft Corporation, East Street, New Haven, Conn.

"Textile shortages and the shrinkage in rubber footwear sales will necessitate production curtailment in September," Walter H. Norton, factory manager of the United States Rubber Company, Naugatuck, Conn., stated in an announcement recently. "On heavy goods a shortage of woven fabrics resulting from labor troubles in the South is giving us trouble. If there is any further interruption in our textile supply we will be obliged to limit our production of heavy goods to customers' emergency orders after September 7. With present footwear prices we cannot afford to substitute higher cost fabrics in goods made for stock. The Gaytee and Gum Shoe departments will probably face a partial shutdown during the last two weeks in September unless unexpected customers' orders are received. No immediate changes are planned for tennis and sundries schedules."

Nelson W. Pickering, president of the Farrel-Birmingham Co., Ansonia, Conn., spent the last two weeks of August on active duty aboard the U. S. S. West Virginia. He holds the rank of commander in the Connecticut naval militia.

RUBBER INDUSTRY GROUP PLANS LATEX MEETINGS

The Institution of the Rubber Industry, London, England, has arranged a series of special meetings dealing with the general subject of Latex for its next session. These meetings will be held by the London, Manchester, and Midland sections of the organization.

Subjects that will be covered during these meetings include: "Production, Distribution and General Properties of Latex," by G. Martin; "Latex Supplies," by F. D. Ascoli; "Special Properties of Latex," by F. H. Cotton; "Latex in the Boot & Shoe Industry," by H. Bradley; and others.

Pioneer Scrip Accepted

Scrip provided by the Pioneer Rubber Company, Willard, Ohio, is being widely accepted according to report. The scrip is issued by the rubber company to its employees instead of cash, and is passed through Ohio banks in the same method a check is presented. When the scrip returns to the Willard United Bank it is redeemed by the Pioneer concern. Acceptance of the scrip has been reported as far as Lorain and Cleveland.

Launch New Goodyear Blimp

Goodyear Tire & Rubber Company, Akron, has launched the latest addition to its fleet of blimps. The latest addition is called "The Enterprise", and is somewhat larger than most of its sister ships, yet is not quite as large as the "Defender", the foremost Goodyear blimp. Tests conducted during the latter part of last month proved the ship worthy of early use.

RUBBER EXPORT LOSS DUE TO TIRE SHOWING

Exports of rubber products in July, 1934, according to the September 1 issue of *Commerce Reports*, issued by the Bureau of Foreign and Domestic Commerce, Washington, D. C., were valued at $1,746,386, as compared with $2,082,963 in June 1934—a loss of 16 per cent which reverses the trend over a period of years for July exports to exceed those of June by 5 per cent. This trade loss was occasioned almost entirely by lower exports of tires, which amounted to 86,482 pneumatic automobile casings as compared with 113,366 in June—a loss of 24 per cent as compared with a normal lower trend of only 3 per cent.

Despite the reduction in July shipments, exports of rubber products for the first 7 months of 1934 were 46 per cent greater than in the same period of 1933 and 23 per cent greater than in the 1932 period, the respective totals being $12,668,862 for the 1934 period, $8,705,137 for the 1933 period, and $10,338,595 for the 1932 period.

Increased exports were registered in rubber footwear (from $47,073 in June to $47,347 in July), mechanical rubber goods ($247,510 to $281,869), rubberized fabrics ($71,030 to $76,232), rubber specialties ($102,868 to $109,247), and hard-rubber goods ($19,424 to $26,667); these gains compare with declining trade in tires and tire sundries (from $1,274,596 in June to $935,263 in July), semi-manufactured rubber goods ($198,327 to $185,711), and miscellaneous rubber products ($122,135 to $84,050).

Appoints Sales Agency

Imperial Oil & Gas Products Company, Pittsburgh, Penna., manufacturers of carbon gas blacks, have appointed Stanley Doggett, Inc., 75 Varick Street, New York City, as exclusive agents in the Metropolitan territory, Connecticut and part of New Jersey.

Club to Hold Outing

The Rhode Island Rubber Club will hold one of its outings, with "all the fixings," at the Warwick Country Club, Providence. Samuel Tinsley and Gladding Price are in charge of all events which, in addition to generous entertainment, include addresses to be made by Ernest Bridgewater, who will discuss synthetic rubber, and W. W. Wiegand. The latter will tell of his recent trip to the Orient.

TRENTON NEWS

A water tank weighing more than 50 tons and containing 13,600 gallons of water collapsed and crashed through the roof and two floors of the plant of the New Jersey Rubber Company, Lambertville, N. J., on Aug. 17. Wreckage of the tower spread over the adjoining tracks of the Pennsylvania Railroad. Machinery and a number of conveyors were badly damaged. The factory, while not in operation for some time, has been kept in readiness to resume when conditions warranted. Charles M. Dilts, superintendent of the plant, announces that a portion of the plant will have to be razed and rebuilt.

More than 2,500 employees of the Thermoid Company, Trenton, recently enjoyed the annual outing of the concern at Springdale Park. Fifty employees were awarded gifts for services ranging from 15 to 48 years. In addition 150 prizes were given to winners in sports contests.

Henry F. Goepfert, Inc., 60 Park Place, Newark, has been chartered at Trenton with $100,000 capital to manufacture tires and other rubber products. William Safirstein, Jacob Shoenholz and Ruth Stahl, all of Newark, are the incorporators.

Span Tire & Rubber Co., of 216 West Main Street, Somerville, N. J., has been chartered by William Span, Rachel Span, Paysach Span and Alfred Span, all of Somerville, to manufacture tires and rubber goods. The capital stock is 25 shares.

F. Robert Lee, Trenton, has resigned as vice-president and sales manager of the Thermoid Company. Robert J. Stokes, president of the concern, severed his connections with the company a few months ago. Mr. Lee has not announced his plans for the future.

Alexander Rubber Co., 143 South Broad Street, Trenton, has been incorporated with 2,500 shares no par to manufacture rubber products. Herman Spiegel, Milton Cohn and Ida Spiegel, all of Trenton, are the incorporators.

Pierce-Roberts Rubber Company, Trenton, is working on new orders and has placed a night shift at work.

Bruce Bedford, president of the Luzerne Rubber Company, Trenton, has been elected president of the Trenton Saving Fund Society.

Frederick R. Sayen, of the Mercer Rubber Company, Hamilton Square, N. J., has been chosen NRA director of Mercer County.

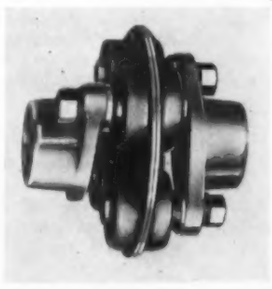
New Rubber Goods

Stream-Lined Rubber Bag

Stream-lining has invaded the flat goods field. Davol Rubber Company, Providence, R. I., has introduced a new line of hot water bottles under the "Relief" trade name which eliminates the tab-like appendages jutting out from the filler spout and bottom of the bottle, substituting in their stead eyelets incorporated in the bottle design. Top and bottom of the new bottles have been molded in sweeping lines, which has been termed "stream-lining." Another feature in the new line is said to be the exclusive Davol process of transferring the rubber in a manner that leaves the surface of the bottle as soft and pleasing to the touch as suede, although the design seems to be sharply etched.

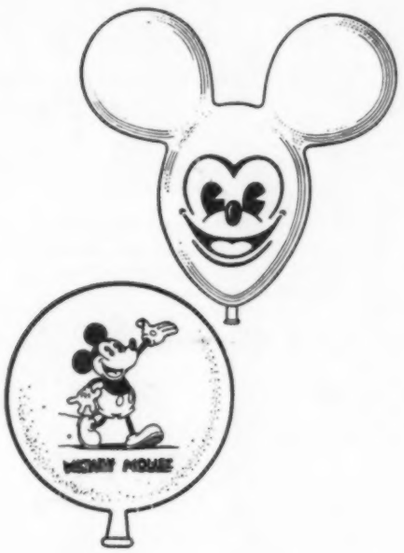
Rubber as a Flexing Medium

The Morse Chain Company, Ithaca, N. Y., is now merchandising the Morse Morflex Coupling device which depends solely on rubber as the flexing medium. No movement in the coupling is made of metal on metal or metal on rubber, all relative movement being within the rubber, confined to the controlled displacement of live, non-cold-flow rubber, which has been treated for age-resistance. The outer section of the rubber block is a fabric ring so that it is securely held in the pressed-steel center. The especially developed resilient rubber used in the device is responsible for the extreme flexibility of the coupling, according to the Morse concern. The rubber blocks are pre-loaded and allow considerable deflection even with light load, so that the coupling can absorb a large amount of tortional vibration as well as shocks and uneven impulses. Illustration shows coupling with shell removed.



New Mickey Mouse Balloons

Oak Rubber Company, Ravenna, Ohio, has announced a line of Mickey Mouse balloons under exclusive license from the Walt Disney Enterprises. One of the items is really three balloons in one, head and ears, all of which inflate as seen in the illustration. The face of the popular cartoon character is printed on both sides of these balloons in two colors. A variety of round and airship balloons, also with Mickey Mouse pictures in two colors on both sides, completes the line.



Bathing Caps of Latex

Last year the International Latex Corporation, Rochester, New York, introduced a bathing cap of latex termed "Lifetex." It apeared in a flat package form wrapped in transparent cellulose. Another ingenious package has been adopted this year, in addition to the flat type, consisting of the latex cap compressed into a small, solid wad, and wrapped in cellophane. They are packed four dozen to the display carton and resemble small onion bulbs. These wad-packaged bathing caps of latex are known as "Wave-Gards." They are available in six colors. The International company maintains a sales office at 261 Fifth Avenue, New York City, in charge of Teddy Golding.

New Farm Tractor Tire

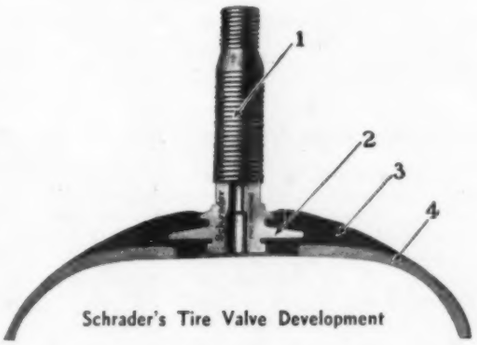
Designed especially for the front wheels of farm service tractors the B. F. Goodrich Company, Akron, has brought out a new low pressure pneumatic tire made with a heavy circumferential ribbed tread design which eliminates improper steering of all-traction front-wheel tires in soft ground, on ridge rows or on side hills.

Envelopes Use Latex Strips

Another advance in the use of rubber is now found in regular mailing envelopes. An English concern is featuring envelopes using latex adhesive strips both on envelope and flap in place of the usual gummed flap. Four rubber strips are used which adhere firmly together without pressure or moisture.

New Type of Tire Valve

A. Schrader's Son, Inc., Brooklyn, New York, have developed a new type of tire valve with a large rubber base moulded to the metal stem. All joints around the valve base are eliminated since the rubber base is cured to the inner tube. The illustration on the right indicates the following: (1) Standard Schrader valve stem. (2) Modified standard metal base. (3) Rubber covered base cured onto metal stem base. (4) Inner tube wall. The rubber base is securely attached.



Schrader's Tire Valve Development

Obituaries

Hubert H. Hanna

Hubert H. Hanna, associated with Goodyear Tire & Rubber Company for the past fifteen years, the last four of which were spent as assistant treasurer, died of a heart

attack on August 12. Mr. Hanna was stricken while driving to Cleveland and died shortly after returning to his Akron home. He was born in 1891, was a graduate of Indiana State University, and spent seven months in the Australia plant of the Goodyear concern. Funeral services were held at his home, 271 Casterton Avenue, with burial at Rose Hill Cemetery, Akron. He leaves a widow, father, brother and a sister.

Richard F. Spencer

Former controller and vice-president of the United States Rubber Company, Richard F. Spencer died on August 9 at his home, 780 Riverside Drive, New York City. He was born at Warsaw, Missouri, and was associated with the shoe industry for many years before joining the rubber concern in 1910. He retired from active business in 1924.

Mrs. J. G. Spurr

Mrs. J. G. Spurr, who was president of the Rubberset Company, Newark, N. J., until her retirement last July, died on August 25 at her home in Newark. She was 63 years old. Mrs. Spurr became president of the company, manufacturers of composition handles for shaving brushes and other toilet articles, in 1930, and retired as president shortly after the acquisition of the company by Bristol-Myers Company in July. Besides her husband, she is survived by two daughters, and a son.

Moves to Mentor, Ohio

The Windmere Products Company, manufacturers of rubber aprons, has moved its plant from Willoughby, Ohio to the Case Block, Mentor Avenue, Mentor, Ohio. Operations at the new plant have already started. E. H. Philpott is president of the company.

PROGRAM ARRANGED FOR RUBBER SAFETY SECTION

A busy program has been arranged for the Rubber Section of the National Safety Council, during the 23rd Annual Safety Congress and Exposition, to be held in Cleveland the week of October 1 to 5. Tuesday and Wednesday mornings, October 2 and 3, have been set aside for Rubber Section activities.

An advance outline of the meetings to be held, arranged by B. F. Gerpheide, Goodyear Tire & Rubber Company, in charge of the program, calls for a resumé of rubber section activities by Chairman H. W. Low, followed by a series of short talks on Tuesday morning.

Speakers to be heard include W. W. Stephens and J. T. Kidney of Goodyear, on the subject "Safety in Rubber Mill and Calender Operation." An address by F. D. Gable of General Tire & Rubber Company will follow. Drs. J. Newton Shirley and W. S. Ash, the latter associated with the Detroit plant of the U. S. Tire Company, will discuss "Dust Problems in the Rubber Industry." Following the speeches the annual luncheon will be held at the Carter Hotel.

Wednesday morning's program opens with an address by E. W. Beck, safety supervisor, U. S. Rubber Company, on "Hazards of Rubber Cement Churn and Storage Rooms," followed by "Safety Kinks in the Rubber Industry" to be delivered by H. A. Walker of Goodyear Tire & Rubber Company. The subject "How Should the Foreman Train the Worker" will be discussed by G. C. A. Hantelman, Instructor, Goodyear Industrial University.

Election of officers also takes place on Wednesday morning, with the program being brought to a conclusion by a series of ten-minute talks on descriptions of serious accidents and the lessons learned. These short talks will be delivered by A. M. Dietz, Pennsylvania Rubber Company; R. A. Bullock, Corduroy Rubber Company; R. W. Morse, Firestone Tire & Rubber Company; and D. G. Welch, Hewitt Rubber Corporation.

Firestone to Erect Building

Firestone Tire & Rubber Company, Akron, received a permit from the Akron Building Department on August 22 to erect a $5,000 office building adjacent to their administrative buildings. The structure, when completed, will house engineering employees. This is believed to be a forerunner of an expansion program at the Firestone power plant.

Adopts "Dayco" Trade Name

Dayton Rubber Manufacturing Company, Dayton, Ohio, has adopted the trade name "Dayco" for its products. Its recently introduced printing press roller has been designated with that name. The company, in the future, will market its fan belts and red tube radiator hose on a direct-to-jobber basis.

Goodrich Changes Its Name

B. F. Goodrich Rubber Company, Akron, has changed its corporate name to that of the B. F. Goodrich Company.

Personals

PHILIP J. KELLY, formerly advertising director of the B. F. Goodrich Company, Akron, credited with instigating the Silver Fleet campaign, has resigned to become associated with Meldrum & Fewsmith, Cleveland advertising company.

H. HIRST SUTTON has been named acting sales manager of the Mohawk Rubber Company, Akron, following the resignation of GEORGE W. SPAHR who was vice-president in charge of sales. Mr. Sutton has been with the Mohawk concern for eighteen years.

L. O. GUINTHER, Goodyear Tire & Rubber Company, and H. W. MAXON, B. F. Goodrich Company, were selected as the Akron representatives of the National Air Races Aeronautical Advisory Committee. The races were held the first week in September.

FRANK HINES was appointed service manager of the Firestone Tire & Rubber Company's branch factory at Syracuse, N. Y. ROBERT HINES, a brother, has been placed in charge of the Firestone transportation division at Liberia, on the African coast.

WILLIAM C. HOOVER, formerly plant designer for the B. F. Goodrich Company, visited Akron last month. He is now a technical engineer for the Russian government, and returned to that country after conferring with Akron rubber factories.

HENRY MELLOR, Goodyear Tire & Rubber Company, Akron, was presented with a 25-year service pin by President LITCHFIELD on August 16. He is employed in the machine shop. In addition to the service pin a gift of $250 was given him by the company.

RALPH C. HARDEN has been appointed manager of packing sales in the mechanical goods division of the United States Rubber Company, New York City. For the last fifteen years Mr. Harden was associated with the Johns-Manville Sales Corporation in various capacities.

KEITH WALKER and W. S. TYSON, personnel manager and manager of engineering, respectively, at the Goodyear-Wolverhampton plant in England, were visitors to Akron last month. Both men have been with the Goodyear organization for several years.

E. E. HELM, director of public relations, General Tire & Rubber Company, Akron, is the sponsor of a plan to force the Ohio legislature to enact an automobile driving license law. His plan was approved by the Akron Traffic Council.

JAMES S. PEDLER, of the Goodrich aeronautical sales department, was a member of the contest committee of the National Air Races, held in Cleveland, early in September.

SID WEST has joined the staff of the Overman Cushion Tire Company, Belleville, N. J. He will aid in the development and promotion of national account sales. His headquarters are in Rockefeller Center, New York City.

REVIEW SHELF

• Monthly Review of New Books, Pamphlets, Company Catalogs, Service Bulletins, House Organs, etc., Pertinent to the Industry.

THE DUPRENE MANUAL. Issued by Rubber Chemicals Division E. I. du Pont de Nemours & Company, Inc., Wilmington, Delaware. August, 1934. 66 pp.

This is the first comprehensive report on Duprene, made available to the industry by the du Pont organization. Because of insufficient production capacity at present the company inserts a request for all rubber manufacturers to refrain from offering products made with Duprene for delivery sooner than March, 1935. The report covers the entire subject of the product. The result of extensive tests taken to determine reactions with vulcanizing agents, anti-oxidants, reinforcing pigments, filler pigments, softeners, deodorants, etc., in tables and charts are given. Various steps in processing from mill mixing through to molding are briefly explained. Substantial reference is made to tests conducted for oil-resistance, with tables showing results for 40 minute cures at 307° Fahrenheit. Tests on other cures gave approximately the same results. The purpose of the Duprene Manual is to summarize in concise form all available information concerning the compounding and vulcanization of Duprene plastic polymer that may be of assistance to those engaged in the manufacture of Duprene products. This purpose it accomplishes excellently.

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ACRIN IN RUBBER FOOTWEAR. Laboratory Report No. 175. Issued by Rubber Chemicals Division, E. I. duPont de Nemours & Company, Inc., Wilmington, Delaware. 1934. 25 pp.

Supplementing Laboratory Report No. 132, the current report discusses methods of obtaining dry, shiny surfaces on rubber footwear by vulcanizing with Acrin, described as a non-discoloring accelerator. Acrin, according to the report, is self-activated and requires a minimum amount of stearic acid to bring out its full accelerating properties. Recommendations for the use of Acrin in rubber footwear are summarized in the report, which is replete with charts showing results at various press cures.

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CHROMALOX. Issued by Edwin L. Wiegand Company, Pittsburgh, Penna. 1934. 56 pp.

This is a catalog describing "the right heat—when and where you want it." Dozens of different types of heating units in hundreds of varied sizes are listed, illustrated and priced. Installation instructions, suggestions and drawings, in addition to charts, graphs and plans, are included in the pages of this useful catalog.

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RUBBER—ASPECTS OF THE FUTURE OUTLOOK. Distributed by Bankers Economic Service, 91 Wall Street, New York City. 1934.

Another discussion on the probable effects of the restriction scheme. The author, J. Luck, uses charts and graphs to show recent trends in production and consumption of rubber throughout the world, and predicts a successful conclusion for the restriction plan. Chart comparison is made in this report between the former Stevenson Restriction Scheme, and the current position of rubber.

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DOW CHEMICAL CATALOG. Issued by The Dow Chemical Company, Midland, Michigan. 101 pp. 1934.

This attractively compiled catalog covers a wide range of information from a scientific viewpoint. It lists in clear, concise form all chemicals produced by the company such as industrial and pharmaceutical chemicals, aromatics, insecticides, dyes, dowmetals, etc. Of interest to rubber chemists are the company's Carbon Bisulphide, Carbon Tetrachloride, Caustic Soda, Ethylene Dichloride, Paraxenol, Propylene Dichloride, Sulphur Chloride, and similar chemical products.

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EIGHTEENTH REPORT ON NATIVE RUBBER CULTIVATION. Prepared by the Bureau of Agricultural Economics, Department of Economic Affairs, Batavia, Java. 1934. 10 pp.

Covering the first quarter of 1934 this report points out the causes behind the rise in standard sheets from 13.8 guilder cents per ½ kilogram in December, 1933, to 16.3 guilder cents per ½ kilogram in March, 1934. Local reports from various sections of the Dutch East Indies colonies are included

CHEMICALS FOR THE RUBBER INDUSTRY. Issued by the Rubber Service Laboratories Co., Inc., St. Louis, Mo. 1934. 34 pp.

A filing piece of literature containing specifications and general information on the accelerators, antioxidants, softeners, colors and miscellaneous materials manufactured by the company, a subsidiary of Monsanto Chemical Company, for the rubber industry. Brief description is made of each individual product in addition to full specifications, general properties and uses, and method of packing. A folder that merits its place in the files of every rubber chemist and manufacturer.

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"FLECTOL" ANTIOXIDANTS. Issued by the Rubber Service Laboratories Co., Inc., St. Louis, Mo. 1934. 19 pp.

Another folder, ready for filing, distributed by the chemical company. This one is devoted to a complete and comprehensive review of the "Flectol" antioxidants. All four grades manufactured are given treatment in the folder as to various tests conducted for flexing results at different steam pressures. The result of additional tests, in table form, are also included in this valuable addition to rubber chemical literature.

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THE STORY OF O'SULLIVAN'S. Published by Swart, Brent & Company, Inc., 25 Broad Street, New York City. 16 pp. 1934. For free distribution.

An interesting booklet adequately relating the saga of the O'Sullivan Rubber Company, Inc., in three separate phases from the birth of rubber heels, through expansion of the industry, up until the formation of the company in its present state. The story is told how Humphrey O'Sullivan, a laborer in a New England factory, cut crude pieces of rubber into the shape of his heels in an effort to secure relief from the heavy vibration of the factory floor caused by rumbling machinery. Soon after, his co-workers followed his tactics. A man of vision, O'Sullivan patented a method of attaching rubber to heels in the late nineties and shortly thereafter incorporated the first company devoted exclusively to the manufacture and sale of rubber heels, at Portland, Maine. From this beginning came the now internationally-known O'Sullivan Rubber Heels.

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PRICE LIST OF AROMATIC PRODUCTS. Published by Givaudan-Delawanna, Inc., 80 Fifth Avenue, New York City. 23 pp. 1934. For free distribution.

A complete price list of all aromatic products manufactured by the Givaudan-Delawanna company. Short paragraphs are also devoted to a line of deodorants sold by the manufacturers, giving brief descriptions and features of each. Fifteen rubber deodorants are listed in the catalog with mention made of several additional deodorants including several for reclaimed rubber, sponge rubber and tiling.

MARKETS

RUBBER—COTTON AND FABRICS—CHEMICALS

NEW YORK, SEPTEMBER 10, 1934

Crude Rubber

ALTHOUGH fluctuating slightly throughout the month crude rubber prices continued their slow but steady march to higher levels. Since our last report quotations for spot have reached as high as 15.85, with futures reaching 17.45 cents for July position. The range in August was narrow, swinging within a 42 point margin. Encouraging reports that the Dutch are succeeding in controlling native rubber plantations, which practically assures the success of the restriction scheme, is said to be responsible for the rising prices. The market retained a firm tone throughout the month. If trading in the outside lagged at any point operations in exchange futures broadened sufficiently to maintain the firmness in the market. The textile strike has not yet had any effect on the market particularly in view of predictions for early settlement. Quotations in the outside market, Exchange, London and Singapore follow:

As of September 8

Plantations—

Ribbed Smoked Sheets—			
Spot	—	@	.15⅜
September	—	@	.15¾
Oct.-Dec.	—	@	.16
Jan.-Mar.	—	@	.16⅛
First Latex, crepe spot	—	@	.16⅞
Amber Crepe, No. 2	—	@	.13⅜
Amber Crepe, No. 3	—	@	.13¼
Amber Crepe, No. 4	—	@	.12⅞
Brown Crepe, clean thin	—	@	.13¼
Brown Crepe, rolled	—	@	.10¼

Latex—

Liquid Latex, per gal.	.58	@	—

Paras—

Up-River, fine	—	@	.10¾
Acre Bolivian, fine	—	@	.11

Balata—

Block, Ciudad	—	@	.50

LONDON MARKET

Standard Smoked Sheets—Buyers—Sept. 7

September	—	@	7 5/8d
Oct.-Dec.	—	@	7 11/16d

SINGAPORE MARKET

Standard Smoked Sheets—Sellers—Sept. 8

September	—	@	7¼d
Oct.-Dec.	—	@	7 3/16d

Reclaimed Rubber

Reclaimers continue to operate on reduced schedules with shipments at low ebb. Rubber manufacturers are not buying for the future in view of the uncertainty of general business conditions. One bright spot for the reclaimers is that despite decreasing consumption of reclaims the percentage of reclaim to crude continues to rise, with 25% reported in July compared to 17.3 in January and 23.5 in June. Prices are unchanged since our last report.

High Tensile

Super-reclaim, black	.08¾	@	.09
High Tensile Red	.07	@	.07¼

Shoe

Unwashed	.06½	@	.06¾
Washed	.08	@	.09

Tube

No. 1 (Floating)	.13	@	—
No. 2 (Compounded)	.07½	@	.07¾

Tires

Black	.05	@	.05¼
Black, selected tires	.05¼	@	.05½
Dark Gray	.06¼	@	.06½
White	.09¼	@	.09½
Truck, Heavy Gravity	.05½	@	.06
Truck, Light Gravity	.06	@	.06¼

Miscellaneous

Mechanical blends	.04¼	@	.04½

Scrap Rubber

Scrap rubber has held up fairly well since our last report with quotations showing a rise consistent with the crude rubber market. Practically all grades of scrap are higher than they have been in some months. Improvement is looked for in the trade towards the end of the year. Quotations follow:

(Prices to Consumers)

Auto tire peelings	ton 18.00	@	20.00
Mixed auto	ton 8.50	@	10.00
Clean solid truck tires	ton 35.00	@	37.50
Boots and shoes	ton 20.00	@	22.50
Arctics, untrimmed	ton 16.00	@	17.50
Inner tubes, No. 1	lb. .06¾	@	.07
Inner tubes, No. 2	lb. .03⅜	@	.03¾
Inner tubes, Red	lb. .02⅜	@	.02½

Cotton

Commencement of the cotton textile strike resulted in losses from 12 to 17 points for spot middling at the end of last month, with October futures quoted below 13 cents a pound on September 4. Confidence in the early settling of the strike, however, brought prices up to 13.15 Saturday for October deliveries compared with 13.63 in the preceding month, a drop of 48 points. Domestic mill buying of spot cotton was very slow last week due to the strike, but export demand showed some improvement. The basis in the South continued very high with farmers reluctant to sell their cotton. The government 12-cent loan furnishes growers an opportunity to hold their cotton off the market in anticipation of higher prices. The government estimated the cotton crop as of September 1 at 9,252,000 bales compared with 9,195,000, as of August 1. Quotations on the N. Y. Cotton Exchange for Middling Uplands follow:

	Aug. 8	September 8		
	Close	High	Low	Close
October	13.63	13.22	13.14	13.15
December	13.78	13.35	13.27	13.27
March	13.94	13.49	13.36	13.36

Tire Fabrics

(Prices Net at the Mill—Process Tax Included)

Peeler, carded, 23/5/3	lb. .40½	@	—
Peeler, carded, 23/4/3	lb. .41½	@	—
Peeler, carded, 15/3/3	lb. .38½	@	—
Peeler, carded, 13/3/3	lb. .37½	@	—
Egyptian, carded, 23/5/3	lb. .51¼	@	—
Egyptian, combed, 23/5/3	lb. .56¼	@	—
CHAFERS			
Carded, American, 1 1/16"	lb. .41	@	.42
Carded, American, 1"	lb. .32½	@	.35½
LENO BREAKER			
Carded, American, 1 1/16"	lb. .41	@	.42
Carded, American, 1"	lb. .32½	@	.35½

Sheetings

Count	Width	Weight			
48x40	36 in.	5.50	lb.	— @	.05⅞
40x40	36 in.	6.15	lb.	— @	.05⅜
40x36	36 in.	6.50	lb.	— @	.05
48x48	40 in.	2.50	lb.	— @	.11¾
48x48	40 in.	2.85	lb.	— @	.11
64x68	40 in.	3.15	lb.	— @	.10¾
56x60	40 in.	3.60	lb.	— @	.09¼
48x44	40 in.	3.75	lb.	— @	.08⅜
44x40	40 in.	4.25	lb.	— @	.07⅜

Ducks

Enameling	lb. .32	@	.37½
Belting and Hose	lb. .34	@	—
Single filling, A grade	lb. .16¾	@	.17¼
Double filling	lb. .17¾	@	.18¼

Closing Rubber Prices on New York Commodity Exchange, Inc.

No. 1 Standard Contract of 10 tons

FROM AUGUST 9 TO SEPTEMBER 9

Date	Spot	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sales
Aug. 9	15.85	15.85	15.95	16.10	16.25	16.41	16.54	16.68	16.82	16.94	17.05	17.25	17.45	—	1110
10	15.57	15.57	15.67	15.81	15.95	16.10	16.23	16.35	16.49	16.63	16.77	16.94	17.15	—	648
11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	15.64	15.64	15.74	15.86	16.00	16.15	16.22	16.36	16.52	16.67	16.82	16.98	17.15	—	592
14	15.43	15.37	15.47	15.61	15.75	15.91	16.01	16.15	16.30	16.45	16.60	16.75	16.90	—	534
15	15.43	15.36	15.46	15.60	15.73	15.87	16.01	16.14	16.27	16.42	16.57	16.72	16.87	—	321
16	15.62	15.58	15.68	15.83	15.97	16.12	16.25	16.37	16.50	16.64	16.79	16.94	17.09	—	330
17	15.55	15.50	15.56	15.71	15.85	16.00	16.13	16.26	16.39	16.53	16.67	16.80	16.93	—	486
18	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	15.50	15.42	15.48	15.62	15.78	15.95	16.08	16.21	16.35	16.48	16.62	16.76	16.90	—	199
21	15.60	15.53	15.58	15.73	15.89	16.06	16.16	16.30	16.45	16.56	16.68	16.83	16.98	—	249
22	15.80	15.70	15.75	15.91	16.07	16.23	16.33	16.48	16.64	16.77	16.90	17.14	17.19	—	442
23	15.75	15.67	15.72	15.87	16.02	16.18	16.31	16.44	16.57	16.71	16.85	16.99	17.13	—	248
24	15.75	15.65	15.69	15.84	15.99	16.15	16.28	16.41	16.55	16.68	16.82	16.96	17.10	—	307
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27	15.70	15.68	15.73	15.87	16.01	16.16	16.28	16.41	16.55	16.69	16.83	16.96	17.09	—	251
28	15.65	15.57	15.62	15.75	15.89	16.03	16.10	16.26	16.42	16.57	16.72	16.85	16.98	—	257
29	15.70	—	15.64	15.77	15.91	16.05	16.16	16.30	16.44	16.56	16.69	16.82	16.96	—	376
30	15.70	—	15.71	15.84	15.97	16.10	16.23	16.34	16.46	16.58	16.71	16.87	17.03	—	353
31	15.69	—	15.71	15.84	15.97	16.11	16.23	16.36	16.49	16.61	16.74	16.87	17.00	—	184
Sept. 1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	15.62	—	15.54	15.66	15.79	15.92	16.04	16.17	16.31	16.44	16.57	16.72	17.02	—	198
5	15.80	—	15.79	15.91	16.03	16.16	16.29	16.42	16.56	16.70	16.84	16.97	17.11	17.23	279
6	15.82	—	15.81	15.93	16.06	16.19	16.31	16.45	16.59	16.72	16.85	16.99	17.13	17.26	422
7	15.75	—	15.74	15.81	15.95	16.09	16.19	16.33	16.47	16.60	16.74	16.88	17.02	17.16	201
8	15.75	—	15.76	15.89	16.02	16.15	16.28	16.41	16.54	16.66	16.79	16.92	17.06	17.19	17
9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Rubber CHEMICAL Markets

NEW YORK, SEPTEMBER 10, 1934

[All Quotations F.O.B. Works Unless Otherwise Noted]

ACCELERATORS

Organic

A-1	lb.	.21	@ .25
A-5-10	lb.	.33	@ .36
A-7	lb.	.53	@ .65
A-11	lb.	.60	@ .75
A-16	lb.	.55	@ .65
A-19	lb.	.56	@ .75
A-32	lb.	.70	@ .80
Aldehyde ammonia, crystals	lb.	.65	@ .67
Altax	lb.		
Captax	lb.		
Crylene	lb.		
paste	lb.	.55	@ .65
Di-Ortho-Tolyguanidine	lb.	.45	@ .55
Diphenylguanidine	lb.	.46	@ .47
Ethylidene aniline	lb.	.36	@ .37
Formaldenyde aniline	lb.	.45	@ .47½
Guantal	lb.	.37½	@ .42
Heptene	lb.	.42	@ .51
Hexamethylene-tetramine	lb.	.40	@ —
Lead Oleate, No. 999	lb.	.37	@ —
Witco	lb.	.10	@ —
Lithex	lb.	.10	@ —
Methylenedianiline	lb.	.18	@ .20
Monex	lb.	.36	@ .37
Oxynone	lb.	3.25	@ —
Phenex	lb.	.68	@ .80
Pipsol X	lb.	.50	@ .55
R & H 40	lb.	3.55	@ 4.00
R & H 50	lb.	.40	@ .41
R-2	lb.	.40	@ .41
R-2 Base	lb.	1.55	@ 1.90
Safex	lb.	4.55	@ 5.00
SPDX	lb.	1.20	@ 1.25
Super-Sulphur No. 1	lb.	.75	@ —
No. 2	lb.		
Thiocarbanilid, drums	lb.		
Trimene	lb.	.20	@ .23
base	lb.	.75	@ —
Triphenylguanidine	lb.	1.20	@ —
Tuads	lb.	.58	@ .60
Ureka	lb.		
Ureka C	lb.	.62	@ 1.00
Vulcanex	lb.	.58	@ .69
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.		
Zimate	lb.	.48	@ .60
Inorganic	lb.		
Litharge, domestic	lb.	.06¾	@ —
Magnesia, calcined, heavy	cwt.	4.00	@ 4.50

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.36	@ .38
Ultramarine	lb.	.12	@ .15

Browns

Sienna, Italian	lb.	.06	@ '13
Umber, Turkey	lb	.04	@ .04½

Greens

Chrome, light	lb.	.23	@ .26
medium	lb.	.24	@ .27
dark	lb.	.27	@ .30
Chromium Oxide, bbl.	lb.	.23	@ .27

Reds

Antimony crimson, 15/7	lb.	.45	@ —
sulfur, free	lb.	.48	@ .52
Indian English	lb.	.09	@ .10
Domestic (Maroon)	lb.	.11	@ —
Red oxide, pure	lb.	.10	@ .12
Rub-Er-Red, f.o.b. Easton	lb.	.09¼	@ —

Whites

Cryptone CB, No. 21	lb.	.06	@ .06½
Cryptone, No. 19	lb.	.06	@ .06¼
Lithopone			
Albalith, black label—11	lb.	.04½	@ .04¾
Azolith	lb.	.04½	@ .04¾
Rayox	lb.		
Titanium oxide	lb.	.17	@ .19
Titanox B	lb.	.06	@ .06½
Titanox C	lb.	.06	@ .06½
XX—20 Zinc Sulphide, bbls.	lb.	.11	@ .11¼
XX—86 Zinc Sulphide, bbls.	lb.	.11	@ .11¼

Zinc Oxide—American Process

American Azo:			
ZZZ (lead free)	lb.	.06½	@ .06¾
ZZ (leaded)	lb.	.06¼	@ .06½
Horsehead Lead Free Brand:			
Special—3	lb.	.06½	@ .06¾
XX Red—4	lb.	.06½	@ .06¾
XX Red—72	lb.	.06½	@ .06¾
XX Red—78	lb.	.06½	@ .06¾
XX Red—103	lb.	.06½	@ .06¾
U. S. P.—X, bbls.	lb.	.12½	@ .12¾
Kadox, black label—15	lb.	.09⅜	@ .09⅝
Blue label—16	lb.	.08⅜	@ .08⅝
Red label—17	lb.	.07	@ .07¼
St. Joe, black label	lb.	.06½	@ .06¾
green label	lb.	.06½	@ .06¾
red label	lb.	.06½	@ .06¾

Zinc Oxide—French Process			
Anaconda, lead free	lb.	.06½	@ .06¾
Anaconda, selected lead free	lb.	.06¾	@ .07
Florence White seal—7 bbls.	lb.	—	@ .10⅝
Green seal—8	lb.	.09⅜	@ .09⅝
Red seal—9	lb.	.08⅜	@ .08⅝
Yellows			
Chrome	lb.	.15	@ .16
Ocher, dom. med.	lb.	.01½	@ .02

BLACKS

Arrow "Aerfloted" Specification	lb.	.0535	@ .0825
Bone, powdered	lb.	.05½	@ .12½
Carbon, compressed	lb.	.0535	@ .0825
uncompressed	lb.	.0535	@ .0825
"Certified," Cabot	lb.	.0535	@ .0825
Spherons	lb.	.0535	@ .0825
"Disperso"	lb.	.0535	@ .0825
Drop, bbls.	lb.	.0535	@ .0825
"Excello," compressed	lb.	.05½	@ .14
"Fumonex"	lb.	.0535	@ .0825
"Gastex"	lb.	.03	@ .07
Lampblack	lb.	.03	@ .07
"Micronex"	lb.	.06	@ .08
"Supreme"	lb.	.0535	@ .0825
Thermatomic—"P 33"	lb.	.0535	@ .0825
"Thermax"	lb.	—	@ —
United "Dixie" & "Kosmos"	lb.	.0535	@ .0825

COMPOUNDING MATERIALS

Aluminum Flake	ton.	21.85	@24.50
Ammonia carbonate, lump	lb.	.10½	@ .12
Asbestine	ton	14.00	@15.00
Barium carbonate (98-100%)	ton	56.50	@61.50
Barium Dust	lb.	.05	@ .06
Barytes southern off-color	ton	10.00	@18.00
Western prime white	ton	23.00	@30.00
Basofor	lb.	.04½	@ —
Bentonite	lb.	.02	@ .03
Blanc fixe dry f.o.b. works	ton	42.50	@75.00
Calcene	ton	35.00	@45.00
Catalpo (fact.)	lb.	.02	@ —
Chalk, precipitated			
Suprex white, extra lt heavy	ton	60.00	@75.00
Clay, Kaolin, domestic	ton	45.00	@55.00
Aerfloted, Suprex	ton	7.50	@15.00
Congaree	ton	7.50	@10.00
Dark Blue Ridge	ton	9.00	@ —
Dixie	ton		
Lexington	ton		
McNamee	ton	10.00	@22.00
Par	ton		
Tensulite	ton		
Cotton Flock		15.00	@ —
Glues, extra white	lb.	.10½	@ .18
medium white	lb.	.20	@ .30
Kalite No. 1	lb.	.14	@ .19
Kalite No. 3	ton	30.00	@55.00
Magnesia, carbonate	ton	40.00	@65.00
Mica	lb.	.06	@ .06¾
Rottenstone (powdered)	lb.	.04	@ —
Soapstone, powdered	lb.	.02½	@ .05
Starch, powdered	ton	16.00	@22.00
Talc, domestic	cwt.	2.81	@ 3.01
Pyrax A	ton	12.00	@15.00
Whiting, commercial	ton		
English Cliffstone	ton	17.00	@18.00
Sussex	ton	33.00	@43.00
Witco	ton		
Wood Flour	ton	20.00	@50.00
Zinc Carbonate	ton	25.00	@ —
Zinc Stearate	lb.	.10½	@ —
	lb.	.23	@ —

MINERAL RUBBER

Genasco (factory)	ton	25.00	@27.00
Hard Hydrocarbon	ton		
Parmr, solid	ton	21.00	@26.00
Pioneer, MR, solid	ton		
Pioneer-granulated	ton		

SPECIALTIES

Aromatics—Rodo	lb.		
Para-Dors No. 5145	lb.	2.00	@ —
Sunproof	lb.	.35	@ .37½
Sponge Paste	lb.	—	@ .80
Tonox	lb.	.56	@ .60

SOFTENERS

Acids

Nitric, 36 degrees	cwt.	5.00	@ 5.25
Sulfuric, 66 degrees	cwt.	1.60	@ 1.90
Tartaric, crystals	lb	.26	@ —

Acids, Fatty			
Laurex	lb.	.15	@ .16
Stearex	lb.	.08	@ .12
Stearic, double pressed	lb.	.08	@ .12
Alkalies			
Caustic Soda, 76%	cwt.	3.60	@ —
Soda Ash, 58% C.L.	cwt.	2.52	@ —
Oils			
Corn, refined, bbls	lb	.06¾	@ .07¼
Cottonseed, crude	gal.	—	@ .04
Cycline Oil	gal.	.15	@ .28
Degras (c.l. 100 bbls.)	lb.	.02¾	@ —
Less c.l. (10-25 bbls.)	lb.	.03	@ —
Lots less than 10 bbls.	lb.	.03¼	@ —
Fluxrite	lb.	.05½	@ .06¼
Palm Lagos	lb.	.03¾	@ .04
Niger	lb.	.03¼	@ .03½
Para-Flux	gal.	.17	@ —
Petrolatum, light	lb.	.02¼	@ —
Pigmentaroil, tank cars	gal.	.14	@ —
in drums	gal.	.20	@ .21½
Pine, steam distilled	gal.	.59	@ .61
dest. dist., drums	gal.	.50	@ .53
Seedine, c.l.	lb.	.07¼	@ —
Tackol	lb.	.08½	@ .18
Witco Palm Oil	lb.	.07½	@ —
Witco Softener (f.o.b. wks.)	lb.	.02	@ —
Woburn No. 8, c.l.	lb.	.06	@ —
Wobonite, c.l.	lb.	.05	@ —
Resins and Pitches			
Pitch, Burgundy	lb.	.05	@ .06
coal tar	gal.	.05½	@ .06
pine, 200 lb. gr. wt.	bbl.	6.00	@ —
Rosin, grade K, 280 lb.	bbl.	6.00	@ —
Pigmentar, tank cars	gal.	.14	@ —
in drums	gal.	.20	@ .21½
Tar Retort, drums	bbl.	12.50	@ —
Solvents			
Acetone, pure	lb.	.11	@ —
Alcohol, denatured, No. 1 bbls.	gal.	.43	@ —
Benzol, 90%	gal.	—	@ .24
Bondogen	lb.	—	@ —
Carbon, bisulfide	lb.	.05	@ .06
Carbon, tetrachloride	lb.	.06	@ —
Dichlorethylene	lb.	.29	@ —
Dipentene	gal.	.31	@ .41
Dryolene (f.o.b. Okla.)	gal.	.10	@ .10½
Ethylene dichloride	lb.	.05½	@ .06½
Gasoline, steel bbls.	gal.	.16	@ —
Naphtha, solvent	gal.	.26	@ .31
Plastogen	lb.		
Rub-Sol (f.o.b. Okla.)	gal.	.09	@ —
Turpentine, spirits	gal.	.55	@ —
wood	gal.	.50	@ —
dest. dist., drums	gal.	.43	@ .45
Waxes			
Beeswax, white	lb.	.34	@ .37
Carnauba	lb.	.20	@ .38
Ceresin, white	lb.	.10	@ .11
Montan, crude	lb.	.10	@ .11
Ozokerite, black	lb.	.24	@ .25
green	lb.	.26	@ .30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.03⅝	@ —
White crude scale 124/126	lb.	.03⅜	@ —
Refined, 125/127, 138/140	lb.	.04¾	@ —

ANTI-OXIDANTS

AgeRite, Gel	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.		
Antox	lb.	.70	@ .75
B-L-E	lb.		
Flectol-A and Flectol-B	lb.	.57	@ .60
Neozone	lb.	.54	@ .62
Oxynone	lb.		
Resistox	lb.	.66	@ .90
Retardex	lb.	.52	@ .65
Stabilite	lb.	.35	@ .40
Stabilite Alba	lb.	.57	@ .62
VGB	lb.	.70	@ .75
	lb.	.55	@ .60

MOLD LUBRICANTS

Dipex			
Rusco, f.o.b. Nitro	lb.	.06	@ .08
Sericite, f.o.b. N. Y.	lb.	.12	@ .30
Soap Tree Bark, cut, sifted	ton	65.00	@ —
Zip	lb.	.06	@ .08
	lb.	—	@ —

SUBSTITUTES (FACTICE)

Amberex			
Black	lb.	.13¼	@ —
White	lb.	.08½	@ —
Brown	lb.	.08	@ .12
	lb.	.07	@ .11½

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½	@ .04½
Sulfur flour,			
Refined, 100% pure (bage)	cwt.	2.50	@ 3.40
Commercial (bags)	cwt.	1.55	@ 2.50
Telloy	lb.		
Vandex	lb.		

Crude Rubber
Latex and Guayule
Reclaimed Rubber
Tires and Tubes

STATISTICS OF THE INDUSTRY

Rim Production
Automobiles
Gasoline
Cotton Prices

U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,735,488	39.76	398,483
1928	439,731	244,854,973	25.03	32,159	18,128,361	25.17	407,572
1929	560,084	239,178,783	19.15	36,485	16,868,733	20.64	523,599
1930	482,082	139,134,330	12.89	30,205	9,316,205	13.77	451,877
1931	497,138	72,918,949	6.54	25,595	4,255,472	7.42	471,543
1932	409,584	31,936,459	3.47	20,929	2,015,612	4.30	388,655
1933	407,817	44,034,064	4.82	20,537	2,601,352	5.65	427,280
1932:							
July	32,306	2,102,915	2.91	2,030	179,699	3.95	30,276
August	33,449	2,027,045	2.71	1,339	128,952	4.29	32,110
Sept.	28,956	1,774,403	2.73	2,388	241,960	4.54	26,568
Oct.	35,096	2,436,522	3.10	1,059	98,022	4.13	34,037
Nov.	28,908	2,263,469	3.48	1,745	158,618	4.06	27,163
Dec.	31,384	2,360,061	3.34	770	66,165	3.98	30,614
1933:							
Jan.	29,822	2,213,828	3.03	1,403	109,916	3.49	28,419
Feb.	22,603	1,554,086	3.12	1,244	102,129	3.73	21,359
Mar.	27,936	1,867,657	2.98	1,127	86,216	3.42	26,809
April	20,240	1,291,136	2.85	798	70,111	3.92	19,442
May	26,002	1,694,963	2.93	1,842	189,451	4.59	24,894
June	22,900	1,780,495	3.47	1,276	156,168	5.46	21,624
July	44,625	4,293,111	4.29	1,419	219,945	6.92	43,206
August	44,257	5,391,709	5.44	2,205	302,132	6.12	42,052
Sept.	44,912	6,110,956	6.07	2,369	335,798	8.89	42,543
Oct.	44,474	6,115,330	6.14	2,669	397,167	6.64	41,805
Nov.	40,582	5,850,714	6.44	2,188	333,631	6.81	38,394
Dec.	39,461	5,869,556	6.75	1,888	293,690	6.94	37,573
1934:							
Jan.	47,963	7,403,123	6.89	1,975	352,116	7.96	45,988
Feb.	34,335	5,262,711	6.84	2,133	476,232	9.97	32,202
Mar.	41,119	6,765,173	7.34	2,947	583,313	8.83	38,172
April	43,841	8,232,746	8.37	2,814	588,453	9.18	41,027
May	48,494	10,001,239	9.21	2,389	544,212	10.17	46,105
June*	47,289	10,747,464	10.14	2,012	501,499	11.33	45,277
July	41,443	9,670,617	10.41	2,366	660,199	13.99	39,077

* Revised.

United States Imports of Guayule, Balata, Jelutong, Liquid Latex

(All Quantities in Long Tons)

	Guayule: Tons	Guayule: Dollars	Balata: Tons	Balata: Dollars	Jelutong: Tons	Jelutong: Dollars	Liquid Latex (1): Tons	Liquid Latex (1): Dollars
1924	1,356	536,392	464	568,456	6,165	1,237,100	2,157	864,059
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	3,853	3,537,810
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	3,388	4,680,386
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,116	876,077
1928	3,075	1,755,685	731	430,855	7,552	2,540,059	4,167	2,185,579
1929	1,231	545,175	728	566,964	8,203	2,458,136	3,728	1,787,997
1930	1,096	347,388	501	422,684	5,907	1,403,244	4,449	1,506,804
1931	—	—	1,208	411,692	5,777	1,019,010	4,650	884,355
1932	—	—	708	147,403	4,607	616,596	5,085	601,999
1933	—	—	1,658	2,261,869	5,989	944,895	11,085	1,833,671
1933:								
June	—	—	759	1,514,296	466	61,229	604	66,827
July	—	—	238	76,141	638	79,049	618	85,636
Aug.	—	—	272	527,147	390	55,509	1,156	196,138
Sept.	—	—	65	30,738	761	149,296	1,343	267,516
Oct.	—	—	119	47,663	542	99,249	1,561	310,531
Nov.	—	—	31	11,252	626	125,160	1,239	282,065
Dec.	—	—	42	20,008	708	143,868	1,290	270,533
1934:								
Jan.	—	—	98	43,932	766	169,966	1,126	239,054
Feb.	—	—	68	36,346	453	102,471	885	193,732
Mar.	51	9,464	145	51,080	25[1]	43,532	1,134	257,545
April	100	18,928	128	50,965	533	98,658	1,334	321,390
May	100	18,928	143	65,471	538	95,710	1,407	368,642
June	—	—	84	49,881	388	71,672	1,458	421,317
July	—	—	160	63,963	482	87,412	1,231	385,733

(1) Weight given in pounds of dry rubber contained in latex.

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1927	1928	1929	1930	1931	1932	1933	1934
Jan.	31,518	34,403	43,002	36,194	28,557	29,648	21,661	40,413
Feb.	30,437	33,702	41,594	33,302	28,797	31,821	21,638	40,609
Mar.	36,141	35,688	44,730	35,540	32,788	29,505	18,047	47,097
Apr.	35,871	32,772	47,521	39,686	33,321	27,515	25,928	44,947
May	34,592	37,333	49,233	39,386	37,817	30,957	44,074	43,012
June	33,801	37,676	43,227	34,195	37,916	41,475	50,743*	40,241
July	29,219	37,407	41,526	29,508	31,397	29,976	49,614*	32,647
Aug.	33,460	42,927	38,274	30,850	27,586	23,721	44,939	.....
Sept.	27,214	39,882	34,707	25,515	23,638	23,847	35,686	.....
Oct.	26,790	40,857	34,800	27,516	22,277	22,286	31,906	.....
Nov.	26,792	37,461	27,659	23,691	22,943	23,231	29,162	.....
Dec.	25,492	31,232	25,531	21,687	21,409	18,015	29,087	.....
Tot.	371,027	441,340	469,804	375,980	348,986	332,000	402,485*	.....

* Revised.

Figures on Quarterly Basis

Quarter	1926	1927	1928	1929	1930	1931	1932	1933
Jan./Mar.	94,301	99,216	103,558	128,565	101,610	89,652	85,309	64,326
Apr./June	87,109	103,242	103,500	139,292	112,229	107,755	92,643	125,126
July/Sept.	93,793	89,210	117,573	113,746	85,261	83,632	72,523	132,406
Oct./Dec.	83,212	80,860	117,597	84,872	72,020	65,645	64,145	94,198
Totals	358,415	372,528	442,227	466,475	371,120	346,684	314,620	416,056

Note—The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Reclaimed Rubber in the United States

(All Quantities in Long Tons)

Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*	Year	Production	Consumption: Tons	Consumption: % to Crude	Stocks*
1924	80,079	76,072	22.4	.....	1929	218,954	226,588	48.4	27,464
1925	132,930	137,105	35.6	13,203	1930	157,967	153,497	40.8	22,000
1926	180,582	164,500	45.9	23,213	1931	133,351	124,126	33.9	19,257
1927	189,144	178,471	47.6	24,980	1932	75,608	77,504	23.4	16,354
1928	208,516	223,000	50.4	24,785	1933	99,560	81,602	19.9	20,746
1933:									
Jan.	5,301	4,811	21.0	16,262	July	12,049	10,317	20.8	[a] 14,108
Feb.	4,578	4,363	20.2	16,570	Aug.	11,708	9,446	21.0	15,037
Mar.	3,847	3,454	19.1	15,496	Sept.	10,435	7,862	22.0	15,869
Apr.	4,617	4,407	13.1	14,370	Oct.	9,466	7,212	22.6	17,748
May	8,366	7,770	17.4	13,734	Nov.	9,063	6,335	21.7	19,170
June	10,591	9,674	19.1	13,231	Dec.	9,539	5,951	20.5	20,746
1934:									
Jan.	9,828	7,000	17.3	24,263	July	9,446	8,175	25.0	24,926
Feb.	9,504	7,646	18.8	23,356	Aug.	....	....	...	....
Mar.	11,479	9,683	20.6	25,113	Sept.	....	....	...	....
Apr.	10,185	9,387	20.9	22,033	Oct.	....	....	...	....
May	10,848	9,500	22.1	22,887	Nov.	....	....	...	....
June	10,820	9,459	23.5	23,664	Dec.	....	....	...	....

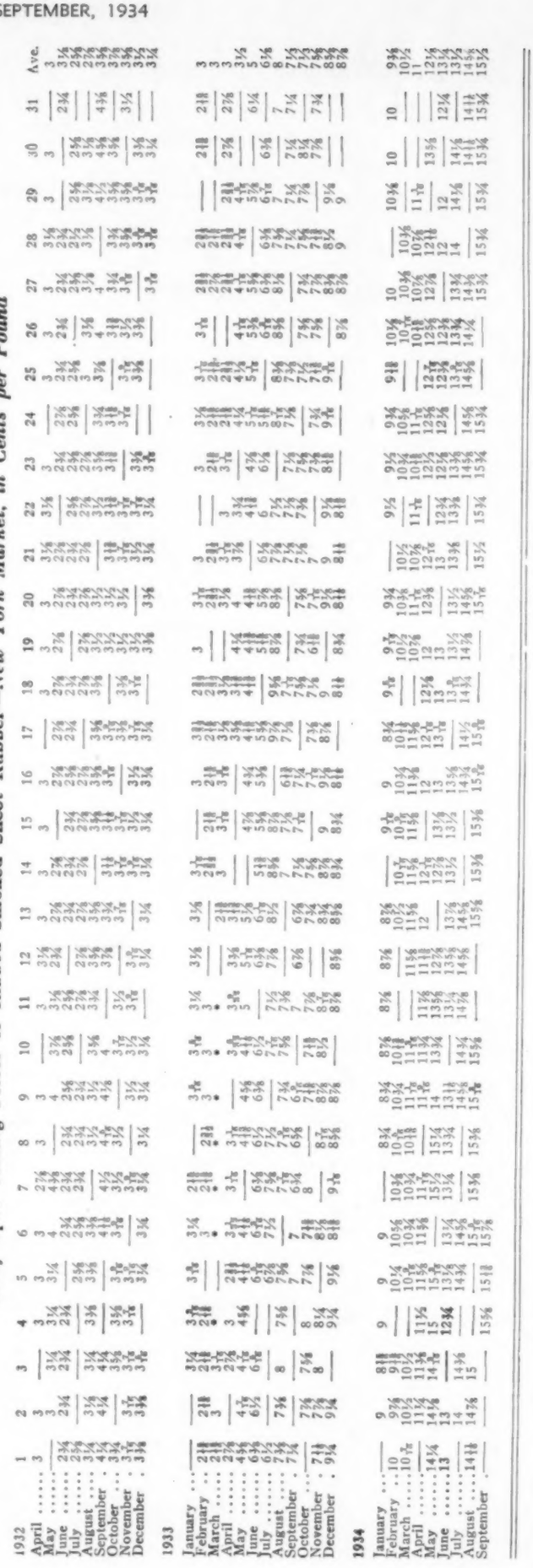
* Stocks on hand at the end of month or year.
[a] Revised.
(Rubber Manufacturers' Association figures raised to 100%)

U. S. Consumption of Gasoline

(In Thousands of Barrels of 42 Gallons)

	1932	1933	1934		1932	1933	1934
January	26,038	26,510	29,416	August	35,706	37,426	.....
February ...	25,378	23,312	25,048	September ..	33,828	34,303	.....
March	29,597	28,227	30,528	October	32,680	32,973	.....
April	31,234	30,176	32,735	November ..	29,895	30,262	.....
May	32,016	33,999	38,141	December ..	27,110	28,787	.....
June	39,489	37,710	36,296				
July	30,929	34,458	37,695	Total	373,900	378,143	.....

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*



Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1929

Year	Cents	Year	Cents	Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15	1922	17.50	1926	48.50
1911	141.30	1915	65.85	1919	48.70	1923	29.45	1927	37.72
1912	121.60	1916	72.50	1920	36.30	1924	26.20	1928	22.48
1913	82.04	1917	72.23	1921	16.36	1925	72.46	1929	20.55

Average Monthly Price per Pound Since 1928

Month	1928 Cents	1929 Cents	1930 Cents	1931 Cents	1932 Cents	1933 Cents	1934 Cents
Jan.	40.25	20.14	15.24	8.34	4.38	3.08	9.32
Feb.	32.75	23.97	15.85	7.70	4.03	2.95	10.45
Mar.	26.82	24.55	15.34	7.71	3.35	3.01	11.01
Apr.	18.97	21.18	14.93	6.43	3.02	3.56	12.10
May	18.99	21.46	14.24	6.49	3.09	4.95	13.26
June	19.59	20.64	12.45	6.35	2.66	6.15	13.51
July	19.40	21.30	11.24	6.37	2.89	8.01	14.60
Aug.	19.46	20.59	9.96	5.38	3.63	7.31	15.47
Sept.	18.47	20.37	8.28	5.08	3.84	7.30	....
Oct.	18.83	19.67	8.20	4.87	3.65	7.64	....
Nov.	18.26	16.62	9.01	4.65	3.44	8.66	....
Dec.	17.97	16.12	9.05	4.64	3.24	8.87	....
Average for Year	22.48	20.55	11.98	6.17	3.49	5.96	....

London Closing Prices of Ribbed Smoked Sheets

(In Pence Per Pound)

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	6¼	——	7⅛	——	17	——	7	7 7/16	
2	6¼	6¾	7⅛	——	18	6 7/16	7⅛	——	
3	——	6 11/16	7⅛	——	19	6½	7 7/16	——	
4	6⅛	7 1/16	——	7 1/16	20	6 5/16	7⅛	7 1/16	
5	6 1/16	7⅛	——	7⅛	21	6 7/16	7⅛	7½	
6	6 1/16	7 1/16	——	7 5/16	22	6 7/16	——	7 5/16	
7	6 1/16	7	7 1/16		23	——	7⅛	7⅛	
8	6½	——	7 3/16		24	——	7 1/16	7½	
9	6½	7	7 3/16		25	6 5/16	7	——	
10	——	7 1/16	7 1/16		26	6 11/16	6 11/16		
11	6 3/16	7⅛	——		27	6¾	7	7 5/16	
12	6 5/16	7⅛	——		28	6¾	7	7½	
13	6 5/16	7	7 1/16		29	6 7/16	——	7½	
14	6½	7 1/16	7 3/16		30	6 11/16	7⅛	7 1/16	
15	6 1/16	——	7 3/16		31	——	7⅛	7 1/16	
16	6 1/16	7	7 1/16						

Average Monthly Price Per Pound

Month	1931 Pence	1932 Pence	1933 Pence	1934 Pence	Month	1931 Pence	1932 Pence	1933 Pence	1934 Pence
Jan.	4.160	3.052	2.264	4.429	Aug. ...	3.385	2.654	3.811	7.401
Feb. ...	3.823	2.760	2.093	4.920	Sept. ..	2.524	2.485	3.728	
Mar. ...	3.822	2.047	2.099	5.136	Oct. ...	2.898	2.425	3.957	
Apr. ...	3.082	1.876	2.323	5.712	Nov. ..	2.890	2.518	4.096	
May ...	3.035	1.825	2.966	6.207	Dec. ..	3.115	2.444	4.200	
June ...	3.082	1.750	3.392	6.245	Average for				
July ...	3.048	1.875	3.860	7.053	Year ...	3.155	2.434	3.233	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Date	July	Aug.	Sept.	Date	July	Aug.	Sept.	Date	July	Aug.	Sept.
1	——	13.20	——	11	13.00	13.55		21	——	13.55	
2	12.10	13.20	——	12	12.85	——		22	——	13.30	
3	12.30	13.10	——	13	13.15	13.60		23	13.10	13.40	
4	——	13.15	13.15	14	13.05	13.45		24	12.85	13.50	
5	12.30	——	13.35	15	——	13.60		25	12.85	13.35	
6	12.15	13.20	13.35	16	13.25	13.50		26	12.80	——	
7	12.10	13.30		17	13.30	13.30		27	12.95	13.25	
8	——	13.75		18	13.35	13.15		28	——	13.35	
9	12.45	13.95		19	13.25	——		29	——	13.40	
10	12.70	13.75		20	13.00	13.40		30	13.20	13.40	
								31	13.15	13.35	

Average Monthly Price Per Pound

	1931 Cents	1932 Cents	1933 Cents	1934 Cents		1931 Cents	1932 Cents	1933 Cents	1934 Cents
Jan.	10.27	6.65	6.23	11.25	Aug. ...	7.21	7.43	9.55	13.40
Feb. ...	10.96	6.85	6.05	12.28	Sept. ...	6.52	6.30	9.64	
Mar. ...	10.90	6.86	6.39	12.30	Oct. ...	6.32	6.30	9.58	
Apr. ...	10.19	6.16	7.02	11.80	Nov. ...	6.44	6.22	10.04	
May ...	9.38	5.72	8.64	11.44	Dec. ...	6.25	6.00	10.17	
June ...	9.05	5.02	9.47	12.20	Average for				
July ...	9.28	5.87	10.76	12.84	Year ...	8.56	6.41	8.63	

World Stocks of Crude Rubber

ON HAND OR AFLOAT TO THE U. S.

At End of	ON HAND 1932	ON HAND 1933	ON HAND 1934	AFLOAT 1932	AFLOAT 1933	AFLOAT 1934	ON HAND AND AFLOAT 1932	ON HAND AND AFLOAT 1933	ON HAND AND AFLOAT 1934
Jan.	322,860	396,376	368,660	42,234	32,539	45,768	365,094	428,915	414,428
Feb.	318,936	381,794	357,094	51,728	32,898	53,063	370,604	414,692	410,157
Mar.	329,586	390,135	353,242	44,190	29,531	54,722	373,776	419,666	405,786
Apr.	336,957	382,167	351,981	40,387	30,745	56,251	377,344	412,912	408,232
May	336,719	364,623	351,329	50,453	43,342	57,921	387,172	407,965	409,250
June	334,657	333,954	358,149	43,079	63,608	46,698	377,736	397,562	404,847
July	333,729	326,609	364,883	37,894	57,435	45,869	371,623	384,044	410,752
Aug.	342,888	325,148		42,846	53,084		385,734	378,232	
Sept.	346,154	334,637		46,188	57,255		342,342	391,892	
Oct.	358,282	343,579		40,176	58,568		398,458	402,147	
Nov.	360,386	353,852		40,879	57,140		401,265	410,992	
Dec.	379,000	364,541		38,360	55,606		417,360	419,147	

(Rubber Manufacturers' Association figures raised to 100%)

STOCKS IN GREAT BRITAIN

Stocks in London

(No. of Tons in Wharves and Warehouses, including Latex)

At end of	1932	1933	1934	At end of	1932	1933	1934
Jan.	67,166	86,481	38,570	July	48,842	41,178	50,490
Feb.	65,942	37,182	38,752	Aug.	47,079	39,480	
Mar.	64,280	40,689	40,501	Sept.	44,942	39,237	
Apr.	61,848	40,911	42,413	Oct.	42,327	37,101	
May	56,089	41,998	42,190	Nov.	40,606	36,139	
June	51,009	43,032	45,674	Dec.	37,407	35,615	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1934					
March	39,680	39,670	40,174	40,178	40,480
April	40,994	41,458	41,589	42,539	
May	41,815	42,908	41,900	42,118	
June	42,503	43,308	43,709	44,157	45,711
July	47,607	48,908	49,654	49,834	
Aug.	50,860	51,555	51,640	51,362	
Sept.	48,255				

Stocks in Liverpool

1934					
March	52,832	53,488	53,929	54,109	54,004
April	54,464	53,832	54,119	53,917	
May	53,915	54,268	54,123	54,276	
June	54,103	54,294	54,327	54,228	54,161
July	54,966	55,141	55,749	55,556	
Aug.	55,467	55,681	55,757	56,343	
Sept.	56,383				

STOCKS IN PENANG AND SINGAPORE

(Stocks held by Dealers—Quantities in Long Tons)

End of	1931	1932	1933	1934	End of	1931	1932	1933	1934
Jan.	48,802	48,850	22,525	40,405	July	51,203	17,017	36,972	65,099
Feb.	49,283	46,954	21,530	41,884	Aug.	48,971	20,649	38,601	
Mar.	49,590	46,591	24,594	47,933	Sept.	47,025	20,415	36,948	
Apr.	45,868	39,663	25,460	48,431	Oct.	52,132	23,158	37,282	
May	44,278	38,690	29,822	76,393	Nov.	46,947	25,419	39,018	
June	47,517	19,770	34,676	73,218	Dec.	45,795	25,341	38,269	

STOCKS IN OTHER CENTRES

End of:	1933	Malaya Mainland	Afloat for Europe	Holland	Colombo	Para and Manaos
May		32,613	24,090	1,534	3,177	4,790
June		35,919	22,930	1,147	2,913	4,321
July		35,020	22,900	1,007	3,208	3,830
Aug.		36,756	22,000	1,033	3,411	3,588
Sept.		36,083	25,900	1,107	4,286	3,288
Oct.		37,392	28,320	1,411	4,889	3,237
Nov.		36,965	38,530	1,285	5,575	3,383
Dec.		38,441	36,700	1,052	5,792	2,981
Jan.,	1934	36,788	39,250	1,115	7,271	3,305
Feb.		39,630	36,563	906	5,366	3,420
Mar.		37,275	33,365	904	4,083	3,519
Apr.		33,765	32,640	905	4,070	3,624
May		7,213	39,370	897	3,066	3,556
June		20,243	40,000	902	3,533	3,273
July		27,235	40,000	1,263	....	....

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total		Total		Total
1924	21,863,311	1928	24,247,282	1932	6,261,336
1925	26,001,664	1929	24,141,502	1933	8,713,962
1926	24,199,524	1930	17,364,096	1934	.....
1927	19,700,003	1931	11,253,800	1935	.....
1934:		1934:		1934:	
January	789,274	May	1,140,132	September	.....
February	1,262,311	June	1,015,730	October	.....
March	1,651,548	July	1,155,024	November	.....
April	1,635,722	August	.....	December	.....

U. S. Tire and Tube Statistics[1]

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1926	1927	1928	1929	1930	1931	1932	1933
Production	61,237	64,439	77,944	68,726	50,965	48,739	40,085	45,304
Shipments	59,002	64,059	74,296	69,395	53,638	48,151	40,260	44,094
Inventory[2]	10,456	10,264	13,624	11,838	9,003	7,775	7,644	8,888

Figures for Recent Months

	PRODUCTION 1932	PRODUCTION 1933	PRODUCTION 1934	SHIPMENTS 1932	SHIPMENTS 1933	SHIPMENTS 1934	INVENTORY 1932	INVENTORY 1933	INVENTORY 1934
Jan.	3,462	2,258	3,922	3,253	2,597	3,222	7,912	7,237	9,684
Feb.	3,871	2,339	4,335	2,553	2,292	3,285	9,172	7,377	10,725
Mar.	3,671	2,038	5,180	2,954	2,092	4,223	9,878	7,290	11,651
Apr.	3,517	3,123	4,470	3,698	3,654	4,438	9,846	6,778	11,981
May	3,820	5,189	4,456	4,258	5,180	5,332	9,379	6,760	11,127
June	5,643	6,100	4,342	10,065	6,305	5,228	4,999	6,615	10,219
July	3,617	5,714		2,404	5,497		6,203	6,844	
Aug.	3,089	4,994		2,655	4,707		6,659	7,070	
Sept.	2,539	3,999		3,082	3,503		6,096	7,595	
Oct.	2,569	3,429		1,799	2,537		6,876	8,462	
Nov.	2,304	3,039		1,711	2,197		7,454	9,247	
Dec.	1,983	3,082		1,819	3,531		7,644	8,888	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1926	1927	1928	1929	1930	1931	1932	1933
Production	76,618	70,823	80,180	68,829	52,420	48,333	36,891	42,546
Shipments	71,591	72,896	77,127	70,592	54,938	50,021	37,911	41,391
Inventory[2]	16,200	13,692	16,117	12,807	9,999	7,922	6,749	7,815

Figures for Recent Months

	PRODUCTION 1932	PRODUCTION 1933	PRODUCTION 1934	SHIPMENTS 1932	SHIPMENTS 1933	SHIPMENTS 1934	INVENTORY 1932	INVENTORY 1933	INVENTORY 1934
Jan.	3,308	2,093	3,530	3,529	2,535	3,199	7,719	6,197	8,403
Feb.	3,281	2,224	4,077	2,728	2,102	3,323	8,760	6,357	8,445
Mar.	3,502	1,883	5,194	2,686	1,902	4,118	9,448	6,369	10,244
Apr.	3,225	2,853	4,735	3,385	3,051	4,342	9,441	6,189	10,585
May	3,820	5,189	4,359	4,258	5,180	4,902	9,379	6,760	10,043
June	5,279	5,448	4,097	9,019	5,778	5,309	5,174	6,097	8,795
July	2,937	5,603		2,160	5,211		5,975	6,440	
Aug.	2,748	4,916		2,503	4,687		6,127	6,628	
Sept.	2,601	3,827		3,098	3,472		5,753	7,008	
Oct.	2,187	3,506		1,658	2,676		6,214	7,831	
Nov.	2,005	2,863		1,578	2,103		6,662	8,625	
Dec.	1,779	2,631		1,724	3,410		6,749	7,815	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% complete up until 1929 and 80% complete for 1929-1933. Beginning 1934, the Association reported its figures to be 97% complete.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States Total	United States Passenger Cars	United States Trucks	Canada Total	Canada Passenger Cars	Canada Trucks	Grand Total
1928	4,357,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929	5,358,420	4,587,400	771,020	263,295	207,498	55,797	5,621,715
1930	3,355,986	2,814,452	540,534	154,192	125,442	28,750	3,510,178
1931	2,389,730	1,973,090	416,640	82,621	63,477	19,144	2,472,351
1932	1,370,678	1,135,493	235,187	60,816	50,718	10,098	1,431,494
1933*	1,920,057	1,573,512	346,545	65,924	53,855	12,069	1,992,126
1933*							
June	253,387	211,483	41,904	7,323	6,005	1,318	260,710
July	233,141	195,023	38,118	6,540	5,322	1,218	239,681
Aug.	236,556	195,144	41,412	6,079	4,919	1,160	242,635
Sept.	196,143	160,900	35,243	5,808	4,358	1,450	201,951
Oct.	138,542	108,073	30,469	3,682	2,723	959	142,224
Nov.	63,987	44,429	19,558	2,291	1,503	786	66,278
Dec.	84,152	53,900	30,252	3,262	2,171	1,091	87,414
1934							
Jan.*	156,907	113,652	43,255	6,904	4,946	1,958	153,811
Feb.*	231,707	187,666	44,041	8,571	7,101	1,470	240,278
Mar.*	331,263	274,738	56,625	14,180	12,272	1,908	345,443
Apr.*	354,745	289,031	65,714	18,363	15,451	2,912	373,108
May*	331,652	273,765	57,887	20,161	16,504	3,657	351,813
June*	308,065	261,852	46,213	13,905	10,810	3,095	321,970
July	266,575	223,868	42,707	11,114	8,407	2,707	277,689

* Revised.

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA [1]							DUTCH EAST INDIES [5]							
	Gross Exports	Gross Exports Minus Imports		Ceylon [2]	India & Burma [3]	Sarawak [4]	British North Borneo [3]	Siam [4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China [3]	Amazon Valley	All Other [6]	World Total [7]
1923	252,816	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,415
1924	259,706	108,524	151,182	39,997	7,655	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	514,487
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,562	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1929	574,836	163,092	411,744	81,584	11,663	11,077	7,381	5,018	65,990	87,789	134,037	9,696	21,148	6,767	853,894
1930	547,043	133,876	413,167	76,970	10,782	10,309	6,781	4,251	69,755	79,396	115,254	7,665	14,260	5,651	814,241
1931	519,740	125,506	394,234	61,769	8,470	10,451	6,247	4,218	75,952	87,747	116,009	11,696	12,121	3,294	792,203
1932	478,252	92,539	385,713	48,973	3,888	6,960	4,664	3,451	61,312	79,837	85,871	13,883	6,450	1,816	702,818
1932:															
Nov.	40,098	10,072	30,026	4,146	185	683	350	371	4,368	6,250	9,080	805	1,164	156	57,588
Dec.	40,118	10,089	30,029	5,801	367	644	350	406	4,683	7,066	8,594	1,211	824	150*	59,493
1933:															
Jan.	46,599	7,857	38,742	4,602	318	590	458	305	4,766	5,630	6,840	1,957	554	125*	58,887
Feb.	37,564	6,167	31,397	5,064	304	541	458	368	4,895	5,119	6,081	895	620	125*	55,867
Mar.	42,059	7,964	34,095	4,905	389	571	458	304	5,092	6,466	6,999	1,102	995	125*	61,501
Apr.	36,752	7,758	28,994	4,582	272	624	583	235	5,226	5,969	8,147	1,122	556	125*	56,435
May	42,902	13,664	29,238	4,643	475	1,091	583	359	6,782	7,298	13,195	1,371	918	125*	66,078
June	41,411	16,538	24,873	5,198	377	1,149	582	632	7,352	6,654	14,779	1,369	704	125*	63,794
July	50,531	18,772	31,759	4,201	270	1,358	728	797	7,367	8,580	16,534	1,310	913	125*	73,942
Aug.	52,266	17,869	34,397	5,839	246	955	728	926	6,460	7,985	15,161	808	1,116	125*	74,746
Sept.	49,607	15,146	34,461	5,111	125	1,027	728	611	5,868	9,164	15,005	1,702	656	125*	74,455
Oct.	61,002	17,390	43,612	5,674	271	959	750	979	6,329	8,682	15,170	1,513	965	125*	84,879
Nov.	54,599	20,142	34,457	6,097	516	1,020	750	1,191	6,684	9,951	14,474	1,599	956	125*	77,820
Dec.	57,579	18,110	39,469	7,062	964	989	978	1,046	7,030	10,183	17,274	2,173	930	125*	88,223
1934:															
Jan.	55,055	21,184	33,871	7,551	1,531	1,197	805	1,290	6,513	8,974	17,718	2,158	576	125*	82,309
Feb.	57,867	19,688	38,179	8,354	775	1,005	805	1,264	6,706	10,277	17,466	1,100	831	125*	86,887
Mar.	58,515	26,470	32,045	6,954	1,412	1,360	806	1,363	8,655	12,043	25,064	1,316	846	125*	91,989
Apr.	56,748	27,963	28,785	5,783	762	1,447	894	1,311	7,282	11,324	24,054	1,519	440	125*	83,726
May	69,403	34,093	35,310	7,528	1,106	1,892	1,397	997	12,104	16,720	34,710	1,408	726	125*	114,023
June	53,282	20,981	32,301	3,305	1,425	1,886	644	1,497	4,860	6,078	15,216	1,504	765	125*	69,606
July	53,335	22,829	30,506	4,093	17	1,662	1,048	2,399	5,762	7,408	14,182	1,703	.....	125*	.....
Aug.	52,641	17,865	34,776	5,369	.....	1,714	.....	1,908	.....	.....	.....	1,610	.....	125*	.....

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927, 1,437 in 1928, 2,670 in 1929, and 1,274 in 1930. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons in 1924, 6 tons in 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928, and practically none in 1929, 1930 and 1931. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons in 1924, 2,239 tons in 1925, 44 tons in 1926, 84 tons in 1927, 1,459 tons in 1928, 1,302 tons in 1929, and 2,656 tons in 1930. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands, and includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. * Figure is provisional; final figure will be shown when available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States [1]	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	238,407	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	343,808
1920	249,530	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	371,409
1921	179,736	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,620
1922	296,594	11,724	24,352	27,546	9,207	15,934	6,430	2,493	2,643	172	—3,807	1,778	589	567	396,222
1923	301,527	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	409,173
1924	319,103	—11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	—807	3,176	944	1,370	416,203
1925	385,596	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	520,274
1926	399,981	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	617,957
1927	403,472	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	632,768
1928	407,572	4,846	36,496	37,855	30,447	25,621	12,433	15,134	8,430	7,958	2,243	4,418	3,178	3,138	599,771
1929	528,608	122,675	55,093	49,275	35,453	34,284	17,169	11,774	15,886	9,445	3,022	6,440	864	4,650	894,638
1930	458,036	120,069	68,503	45,488	28,793	33,039	18,639	16,387	5,354	10,635	2,924	7,710	2,400	4,468	822,445
1931	475,993	86,170	46,466	39,688	25,261	43,483	10,149	30,671	7,649	11,009	2,220	6,360	2,605	7,717	794,641
1932	393,844	44,086	42,506	45,121	20,917	56,027	14,469	30,637	12,576	9,519	2,851	7,262	4,359	9,444	693,618
1933	398,365	73,335	61,953	54,120	19,332	66,831	19,341	29,830	13,534	11,166	1,243	7,831	5,520	10,402	.....
1933:															
Apr.	20,236	7,765	6,308	4,805	555	5,495	2,207	2,274	1,580	882	163	606	281	400	53,565
May	24,894	11,085	4,144	4,622	1,704	5,289	1,278	1,691	425	710	—525	536	433	432	56,718
June	22,228	8,739	4,056	3,639	1,441	3,330	1,997	2,000	613	469	—519	772	541	400	49,706
July	43,824	3,961	3,774	4,103	1,192	1,460	1,146	2,952	2,347	299	16	486	435	287	66,282
Aug.	43,208	4,330	5,251	4,193	1,795	4,424	1,249	3,312	1,500	325	209	616	606	2,759	73,779
Sept.	43,886	4,341	4,111	5,841	2,620	5,369	2,055	2,168	794	864	189	604	790	577	74,211
Oct.	43,366	3,373	4,921	4,772	2,580	6,150	1,836	2,084	604	1,118	310	777	441	686	73,081
Nov.	39,633	3,953	5,419	4,086	2,184	6,296	942	4,483	301	1,129	222	878	493	882	70,903
Dec.	38,864	6,524	5,415	4,933	1,773	6,865	1,029	2,400	190	1,360	213	703	776	1,772	72,817
1934:															
Jan.	47,114	9,503	6,472	6,057	1,721	5,628	2,517	2,749	566	2,173	381	1,185	484	1,355	88,276
Feb.	33,087	10,785	5,301	5,490	1,854	4,570	2,388	3,399	950	1,538	287	464	656	516	73,357
Mar.	39,306	14,008	4,980	6,453	3,411	5,655	1,394	4,018	671	965	284	836	394	976	86,242
Apr.	42,262	9,999	3,210	6,701	2,419	5,679	1,966	1,326	415	504	262	1,217	752	465	77,177
May	47,412	9,786	3,634	6,499	2,218	6,905	2,207	4,360	769	214	322	940	147	1,767	.....
June	46,785	16,564	3,803	6,171	2,208	6,745	1,897	.....	1,512	837	331	.....	1,146	1,672	.....
July	40,308	12,266	4,051	5,494	2,430	.....	.....	.....	932	.....	.....	.....	.....	.....	.....

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. [1] United States imports of guayule are included in this compilation. * Figure is provisional; final figure will be shown immediately it becomes available.

A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

Chemicals and Compounding Materials — Machinery and Equipment—Crude, Reclaimed and Scrap Rubber—Fabrics—Rubber Products — Consulting Engineers.

Chemicals and Compounding Materials —

ACCELERATORS—
Ureka C—Ureka Blend B—Ureka.—A-1, A-7, A-11, A-16, A-19, A-32, Z-88, A-510, DPG
ANTIOXIDANTS — Flectol A, Oxynone
The RUBBER SERVICE Laboratories Co.
611 Peoples Sav. & Trust Bldg., Akron, O.
A Division of MONSANTO Chemical Wks.

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.
Rare Metal Products Co.
Belleville, N. J.
Direct Factory Representation

ASBESTINE—Specially prepared for use in Rubber. Send for liberal working samples.
SOLE PRODUCERS
International Pulp Co.
41 Park Row New York City

CALCENE—The Ideal low gravity, white reinforcing pigment. Gives high tensile and elongation properties with exceptionally good resistance to tear and abrasion.
The Columbia Alkali Corporation
BARBERTON, OHIO

CARBON BLACK—*Micronex*
the world's standard gas black, universally known as the "King of Rubber Pigments."
Binney & Smith Co.
41 East 42nd St. New York City

CABOT CERTIFIED CARBON BLACK
"Spheron"
Godfrey L. Cabot, Inc.
77 Franklin St. Boston, Mass.

CARBON BLACK—*Aerfloted*
Arrow Black for rubber compounding. Standard for grit-free uniformity.
J. M. Huber, Inc.
460 West 34th St. New York

—When Suppliers Have to Curtail

they can most economically keep their names before customers by using space in the

MARKET PLACE

—that section of THE RUBBER AGE where the products of all the leading sellers of chemicals, equipment and other supplies and services are listed regularly. *The cost is only $5 a month for each listing.*

CARBON BLACK
SUPREME—*the up-to-date standard for rubber*
Imperial Oil & Gas Products Co.
Union Bank Bldg., Pittsburgh, Pa.

CARBON BLACK
DIXIE...KOSMOS
Used throughout the world
UNITED CARBON COMPANY
Charleston, W. Va.
New York • Akron • Chicago

CARBON BLACK
DISPERSO . . . *the specially developed Carbon Black that gives* BETTER DISPERSION.
WISHNICK-TUMPEER, INC.
251 Front Street New York

CATALPO—The universal and standard rubber pigment now being used in treads, solids, tubes, carcass frictions, etc.
Moore & Munger
33 Rector Street, New York City

CHEMICALS

For Rubber	For Industry Generally	
Accelerators	*Acids*	*Latex*
Antioxidants	*Oil of Myrbane*	*Lotol*
Specialties	*Aniline Oil*	*Dispersions*

The Naugatuck Chemical Co.
1790 BROADWAY NEW YORK

CHEMICALS and compounding ingredients; Clay, Accelerators, Mineral Rubber.
R. T. Vanderbilt Co.
230 Park Ave. New York City

CHEMICALS and Mineral Ingredients—Whiting, Clay, Talc, Barytes, Colors. Heavy Calcined Magnesia. Carbonate of Magnesia, Pumice Stone.
Standard Since 1890
Whittaker, Clark & Daniels, Inc.
245 Front St., New York

COLLOIDAL SULPHUR
COLLOIDAL ZINC OXIDE
COLLOIDAL COLORS
Heveatex Corporation
78 Goodyear Ave., Melrose, Mass.
Offices in New York, Akron, Chicago

COLORS—*for Rubber*
Fine organic colors—Reds, Blues, Oranges, Violets, Greens—or any shade to meet your requirements—also Rubber Dispersed Colors
Ansbacher-Siegle Corporation
Rosebank, Staten Island, N. Y.
820 So. Clinton St., Chicago, Ill.
Agents in Principal Cities

COLORS
BRILLIANT ORGANIC DYES; PERMANENT, NON-BLEEDING, LOW COST For All Cures
The RUBBER SERVICE LABORATORIES CO.
611 Peoples Savings & Trust Bldg.
Akron, Ohio

CUMAR—Paracumarone Resin.
A neutral gum for rubber compounding.
Samples and prices on request.
The Barrett Company
40 Rector St. New York City